The Decline of Infant Mortality in England and Wales 1871-1948: A Medical Conundrum. The Case of Lyncombe & Widcombe (Bath, Somerset) 1871-1911

Thesis

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ABSTRACT

According to civil registration data for England & Wales there was little or no change in the infant mortality rate during the nineteenth century. At the beginning of the twentieth century, however, rates began to decline rapidly, falling from 150 per 1,000 live births in 1900, to approximately 6 per 1,000 today. This dissertation, part of a wider research project, examines the pattern of infant mortality in the district of Lyncombe & Widcombe, Bath (Somerset) between the years 1871-1911. Particular attention has been paid to the area known as the Dolemeads, situated between the River Avon and the Kennet & Avon Canal. Data has been extracted from local primary sources such as Vaccination Registers and Medical Officer of Health Reports for the years 1871, 1892 and 1911, in order to study levels of infant mortality and to identify possible causes. The different variables examined include improvement to the urban environment, particularly the water supply, and to the domestic environment, including housing, infant feeding, socio-economic status and fertility decline.

The main conclusion of this study is that the underlying IMR for Lyncombe & Widcombe declined throughout the period 1871-1911, in contrast to both the national trend and also the pattern of decline in other districts within the city. No single factor can be identified as having had the greatest impact on the reduction of infant deaths, however, improvements in living conditions including the provision of new Council-funded housing and better healthcare for nursing mothers, may have made a significant contribution to the decline.

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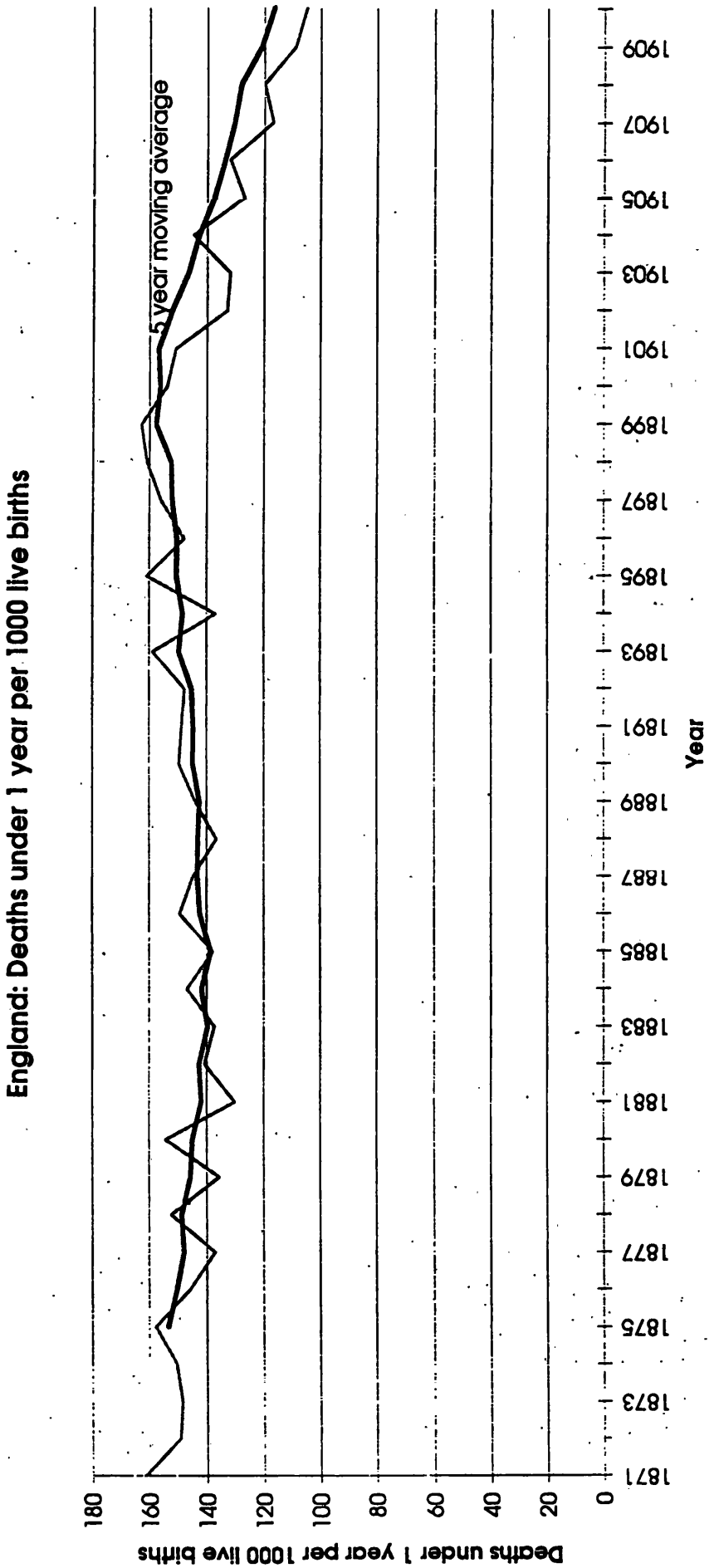
Graph 1.



Source: Registrar General's Quarterly Returns

Introduction

According to statistics gathered from civil registration data for England & Wales and published by the Registrar General, there was little change in the overall infant mortality rate from the middle of the nineteenth century until the early 1900s (Graph 1.) Since then, there appears to have been a steady decline in the rate from around 150 deaths per 1,000 live births to 6 per 1,000 today. Further investigation reveals, however, that deviations from the national rate can be found when examining different geographical locations including rural and urban areas, larger and smaller towns and industrial centres. Within each of these locations there were further variations in the infant mortality rates between different social and occupational groups. Subsequently, it appears that the rate and timing of a decline in infant mortality was not uniform throughout the country during the period between 1871-1911.

Researchers such as Williams & Galley (1995) (Appendix 5a, 5b) have identified a number of factors that may have contributed to an overall decline in infant mortality but, when working with aggregated data, it is difficult to identify these determining factors in a specific location. What is required, therefore, is a micro-study of an area with detailed knowledge of local variations in factors such as housing, socio-economic status and the local environment, in order to understand their impact on infant health. Bath has been selected for this study because the factors most often cited as causes of infant mortality, such as rapid industrialisation, were largely absent. Famed as a health resort, it was a city of some size and importance in the nineteenth century. However, whilst the central area remained densely populated, the overall population figures between 1871 and 1911, actually fell from 52,557 to 50,744 (Appendix 3.f.). Although several large industries were based in the city including stone quarrying , crane building and cabinet making, the majority of the working

population was employed in commerce or domestic service. The overall infant mortality rate for Bath was below the national level between 1871-1911, although it followed the same trend, beginning to fall in the 1870s and 1880s, rising during the 1890s, and declining from the 1900s onwards (Appendix 1.b.).

The main aim of this study is to identify and examine possible causes of infant mortality in Bath, specifically the district of Lyncombe & Widcombe and to determine, if possible, the impact of each on the infant mortality rates for that part of the city. In order to achieve this, data has been gathered from a number of local primary sources, including Vaccination Registers and Medical Officer of Health Reports, to enable a comparison of mortality rates, both between different districts and over time. To provide a context for the discussion of infant mortality in Bath, the study begins with a short introduction to the topography and history of the city, together with the pattern of settlement and extent of urbanization. This is followed by a detailed examination of the primary sources that have been used and an analysis of their strengths and weaknesses. After a discussion of the pattern of Infant Mortality Rates (hereafter referred to as IMR) in the city between 1871-1911, a number of possible causes are investigated. These are viewed within the context of current theories on infant mortality, together with those offered by observers contemporary with the period, including the urban and domestic environment and socio-economic variables. This is concluded with a short summary of the main findings with regard to principal causes of mortality decline in Lyncombe & Widcombe, and their relationship to relevant aspects of the current debate. Relevant charts, graphs and tables are included in the text where appropriate and all tables of source data, additional graphs, maps, charts are included in the Appendices, sources and relevant books and journal articles are in the Bibliography. Ordinarily, a study such as this would be too small to have an impact on the subject of infant mortality decline, however, when it constitutes part of a much wider body of research, then it has the potential to make a significant contribution to the debate.

The City of Bath – Background information

The City of Bath is situated in the county of Somerset, approximately 109 miles west of London and 13 miles east of Bristol, latitude 51 23'N, longitude 2 21'W (Appendix 3.a.) Built on the banks of the River Avon it lies at 60 feet above sea level and is surrounded by hills which rise to between 550 and 700 feet (MOH Report for Bath 1907). The underlying geology, a combination of oolitic limestone, clays and sand, is responsible for the presence of the hot mineral water springs, whose healing properties have been promoted since pre-Roman times. For centuries people have come to the city to drink or bathe in the waters, in the belief that it would cure a wide range of illnesses. At the height of its fame in the eighteenth century, many wealthy people including royalty, would come down to Bath for 'the Season' to 'take the waters' and attend the numerous social events. Many of Bath's finest neo-classical buildings, such as the Royal Crescent and Circus, were constructed at that time, not only to meet the demands of the visiting nobility but also as a showcase for the city's second most valuable natural resource – Bath stone. As a result of the attention focused on the social and cultural aspects of the city, there is a common misconception that little or no industry existed during the last century. It did, although its manufacturing base never dominated its economy (Harper 1989 p7). The principal industries included the extraction of stone, crane building, printing and cabinet making. Domestic service remained the most important occupation for women , even as late as 1911, it still accounted for approximately half of all employed women.

Good transport and communication networks linked Bath with the nearby port of Bristol and other centres of trade. This enabled local products, such as Bath stone, to be shipped by barge down the River Avon to Bristol for distribution around the country. The opening of the Kennet & Avon Canal in 1810, made it possible for goods to be carried all the way

from Bristol via Bath to London, in approximately four days. The canal was later superseded by the railway, with three different companies serving Bath prior to nationalisation in 1948. The Great Western Railway between Bristol and London came to Bath in 1840/41, entering the city on a viaduct through the residential area known as the Dolemeads, east of Bath Spa Station. The Midland Railway (1869) linked the city with the Midlands and the North, closely followed by the Somerset & Dorset Joint Railway (1874) for the south coast of England via the north Somerset collieries (Appendix 3.n.).

After the Public Health Act 1872, the Bath Urban Sanitary Authority was created which comprised the sub-districts of Abbey (the central parishes of St.James, St.Peter & Paul and St Michael), Lansdown, Walcot, Bathwick and Lyncombe & Widcombe. The Rural Sanitary District comprised two large sub-districts, Twerton and Batheaston (Appendix 3b,3c,3d,). During the 1880s, the Abbey and Lansdown sub-districts were added to Walcot, making this the largest district in the city, followed by Lyncombe and Widcombe, and the smallest, Bathwick. During the nineteenth century the population grew to over 54,000 in 1851, but then fell back slightly to remain static at just over 50,000 between 1871 and 1911. This was in marked contrast with other large towns in England, Wales and Scotland, which had expanded rapidly largely as a result of increasing industrialisation (Appendix 3.e.). One explanation for this may have been the disparity that existed between males and females and the relatively high percentage of older people, attracted by Bath's reputation as a health resort. Both of these factors would have affected the overall birth rate figures which remained lower than the average for England & Wales during this period.

There were considerable variations in the levels of infant mortality in and around Bath, and often within the districts themselves. Whilst this study will consider the possible factors influencing IMR in Bath as a whole, a closer examination has been made of the

second-largest district – Lyncombe & Widcombe (later known as Lyncombe) (Appendix 3.d.). It was situated south of the River Avon and extended upwards along the slopes of the southern hills to the area known as Odd Down, at some 600 feet above sea level. The parish saw a 25% increase in population between 1841 and 1881, which may have been as a result of the construction of the Great Western Railway and the employment opportunities that it offered. Although during the 1870s it had the highest birthrate in Bath, it had only the second highest mortality rate, after Walcot. Within Lyncombe & Widcombe was an area between the River Avon and the Kennet & Avon Canal known as the Dolemeads. Particular attention has been paid to this area because it is possible to isolate and study a number of possible factors influencing infant mortality rates. Firstly, there is the presence of distinct environmental features such as the proximity to the river and the canal, together with the underlying clay soils, which made the area prone to flooding. One contemporary wrote, 'The Dolemeads were known as 'mud island' from the dirtiest condition on the slightest rainy provocation. Pigstyes were not unknown there, and it was used as the dumping ground for the house refuse, which a man, with a donkey and cart, collected at his leisure.' (Tyte 1898 p51) After successive floods and poor publicity regarding the living conditions of many inhabitants, large-scale slum clearance in the early 1900s made way for the first council housing scheme in Bath. This enables comparisons to be made between mortality statistics both before and after improvements were made. (Appendix 2.g.).

The socio-economic profile of the inhabitants changed during the period, with increased migration to the newly constructed terraced houses in other parts of the district. These two and three bedroom dwellings, built on the southern slopes of the hills surrounding the city, were some distance from the River Avon and unlikely to suffer from flooding. They also had more reliable water supplies and were not in close proximity to nuisances such as slaughter houses or middens. The houses were single family occupancy, in contrast to the

tenements shared by three or more households in most of the Dolemeads. This is discussed in greater depth on page 28. Of the families who remained in the Dolemeads, many were supported by men employed as labourers, particularly in the Bath stone industry. This means that comparisons can be made with men in similar occupations elsewhere and between different occupational or income groups , in order to assess the impact of socio-economic factors on levels of mortality.

Entries for the Bath Union Workhouse, situated in Frome Road, Odd Down, were also included in the registers for Lyncombe & Widcombe. This provided valuable information regarding illegitimate births, which can be compared with data for both legitimate births and illegitimate births outside of the workhouse (Page 46). Finally, this district has not been as well-researched or documented as some locations in the city such as Avon Street, in the adjoining district of Walcot, making it suitable, therefore, for further study.

The City of Bath provides an interesting subject for this case-study, for, with its long reputation as a health resort, lack of heavy industry and low overall population growth, it does not appear that its infant mortality rates can be explained by current theory. As a consequence, it is possible to concentrate on a number of alternative causes such as the provision of new housing, improved water supplies and the implementation of flood prevention measures which may have played a significant role in the reduction of infant deaths at the turn of the last century.

Primary Sources

Vaccination Registers

The main source of data for this study has been the Vaccination Registers for the sub-districts comprising the former Bath Poor Law Union. They all cover the period 1871-1912, with the exception of the Registers for Bathwick and Batheaston which include entries up to June and May 1914 respectively (Appendix 2.a). Legislation was passed in 1871, requiring district registrars to make returns of all births and infant deaths for the purposes of compulsory vaccination against smallpox. The Registers enabled the local Vaccination Officer to notify parents and record successful vaccinations, together with the deaths of children that occurred in the period prior to vaccination. The Birth Register gave: 1) the registration number of civil birth, 2) date of birth, 3) place of birth, 4) full name, 5) sex, 6) name of father, or if illegitimate, mother, 7) occupation of father, or if illegitimate, mother, 8) date when notice sent, 9) date of successful vaccination, postponement or insusceptibility to vaccination, 10) medical man who signed the certificate, 11) date of death of any child who died before vaccination, 12) reference number in Vaccination Officer's Report Book if any problems. The Infant Death Register not only gave details such as name, date, age, place of death and father's name and occupation, it also included the birth registration number of the dead child. In effect, this means that these two sources of information provided a record of the complete mortality experience during the first year of life, unlike other sources such as the Registrar General's returns.

Unfortunately, the Infant Death Register for Bath has not survived and no deaths were recorded in the Vaccination Registers *after* vaccination had taken place. Information on post-vaccination is, therefore, limited. There is a Birth Notification Register from 1912, which is thought to have been compiled by midwives or health visitors, in response to the Birth Notification Act 1907. Not only does it include all registered births, but also deaths both pre- and post-natal, including stillbirths, which would not have been included in the

Vaccination Registers. In addition, there are details of how infants were being fed, but no indication of duration of breastfeeding. (Appendix 2c).

Between 1853 and 1898 all children in a district were required to be vaccinated within three months of birth and it was also the responsibility of Vaccination Officers to trace unvaccinated children who had moved into or out of the area. Births for the Bath Union Workhouse were often entered in sequence in the Registers and vaccinations were given by the same medical officer in each year. In the rest of Lyncombe, parents appear to have used private doctors and the Public Vaccinator. Not everyone supported the idea of compulsory vaccination, however, with many opposed on both health and ideological grounds. To some, the idea of introducing any disease or infection into a healthy body, was anathema. Others, meanwhile, challenged what they saw as the increasing interference of the State into people's lives. In Bath, a branch of the Anti-vaccination League, was listed in the Post Office Directories for the years 1903-1912. The objects of the League were listed as being

> 'to secure the entire repeal of the Vaccination Acts; the disestablishment and disendowment of the practice of vaccination and the abolition of all regulations in regard to vaccination as conditions of employment in state departments, or for admission to educational or other institutions.'
>
> (Post Office Directory for Bath 1903 p.895)

In response to a public campaign against compulsory vaccination, legislation was passed in 1898 allowing parents to apply for a certificate of exemption from a local magistrate. The date of the certificate was then entered in the relevant column in the Vaccination Register. In addition, the maximum period for vaccination was also extended from three to six months. The level of compliance in Lyncombe & Widcombe appears to have reflected national trends in vaccination. From the entries in the Vaccination Registers for the years

1872, 1892, and 1911 the number of successful vaccinations fell from 86% in 1872, to 57% in 1892 and only 34% in 1911, with 149 exemptions recorded that year.

In addition to the Registers are the Vaccination Officers' Report Books, also for the period 1871-1914. Those for Bath between 1871 and 1907 cover all districts in each volume, whereas later years are divided into books for each separate district. The numbered entries in the Report Books are not sequential, but correspond with cases in the Registers where the child had remained unvaccinated. In some, but not all, cases the Report Books provide more information concerning individual circumstances, reporting successful vaccination or reasons for exemption, often long after the official notification. (Appendix 1m.) The Majority of children in Lyncombe for the three selected years were either vaccinated or exemptions obtained between the ages of three and four months. In both 1872 and 1911, however, two children were not vaccinated until they were 24 months old and in 1892, there is an entry for a child aged 38 months. This gives an indication of the thoroughness of the particular Vaccination Officer concerned. In the 1892 Register for the district of Lyncombe & Widcombe, however, there are a number of entries with no confirmation of vaccination or death recorded. This lack of information could be attributed to different factors such as the conscientiousness of the individual officer involved or to the actual difficulty of trying to trace families who have left the area. For example, in entries for children born to unmarried women who had given birth in the Workhouse, the letters N.F. frequently appear, indicating that they could not be found.

Apart from the Vaccination Registers, the main primary source covering infant mortality are the Reports compiled by the Medical Officer of Health for Bath (hereafter referred to as the MOH). He was responsible for health matters within the Bath Urban Sanitary Authority, areas within the Rural Sanitary District, such as Batheaston and Twerton, were not included

in the Reports, which makes it difficult to compare results between urban and rural locations. The district of Bathwick, however, did include data from less densely populated areas such as Combe Down and Claverton, which were situated on the hills south and east of the city centre. This has been used for comparison where appropriate.

There are a number of reasons why the MOH Reports are a good source when researching possible causes of infant mortality decline. There is little doubt as to the authenticity of the Reports and they are contemporary with the period being studied. They are also a good standard source, because they were created within a nationally recognised framework, ensuring continuity of information across large geographical areas. The Reports are extremely relevant to this particular subject because they include data such as birth and mortality rates for different districts, seasonal mortality, and details concerning public health issues and initiatives.

From 1871 onwards, the Reports appear in the form of hand-written weekly and quarterly/annual Report Books. The first MOH, Dr Barter, included a breakdown of all births and deaths by district, together with brief references to the location of epidemics or inspection of properties. In contrast, his successor Dr Anthony Beaufort Brabazon (MOH for Bath 1876-1896), was far more outspoken on aspects of public health and welfare, providing a highly personal viewpoint within this conventional source. It is always important to remember, however, who was actually responsible for writing the Reports and the purpose for which they were intended. The Medical Officer of Health, as an employee of the Sanitary Authority, cannot be considered to be totally objective in his comments, which may have affected the manner in which certain issues were handled. A good example of this is the *Special Report on the Average Rate of Mortality in Bath for 1877 and Winter Quarter 1878*, which was produced by Brabazon on the orders of the Bath Urban Sanitary

Authority, following criticism of Bath's high rates of mortality in relation to other comparable towns. In it he mounted a robust defence of his employers, absolving them of any neglect or complacency regarding health matters in the city. Instead, he produced statistics to demonstrate that, not only were the rates lower than in other similar towns, but that possible causes such as overcrowding or deficiencies in water supplies and sewerage, were not significant factors. He concluded by attributing the levels of mortality to Bath's popularity as a spa ,

'It is due to natural causes, peculiar and incidental to Bath, and consequent on her position as a health resort, causes which do and ever will tend to produce comparatively high mortality, but causes which as far as regards any particular sanitary measure are non-preventable and unavoidable.' (MOH Special Report 1878). Dr Brabazon was succeeded by William H.Symons as Medical Officer of Health for Bath in 1896, and who was still in post at the end of the period being studied.

After 1888 the MOH Reports appeared in printed form and several bound volumes are held within the Guildhall Archives in Bath (Appendix 2.a.). Special Reports on diverse subjects also appear in the Annual Reports, these include the water supply (1897); the milk supply (1898); housing of the working classes (1901) and the medical inspection of school children (1908).

One obvious problem when using the different primary sources is the accuracy of the data being presented. Anomalies occur which may simply be a result of inaccurate transcription or even mathematical errors. The MOH Report for Bath in 1911, for example, gives the IMR as both 86 and 93 per 1000 births,whereas the Forty-second Report of the Local Government Board (1912-13) records the level as being 111 per 1000. There are several possible explanations which may account for the differences, ranging from simple errors to deliberate manipulation of statistics to conceal the true picture. This, however, cannot be

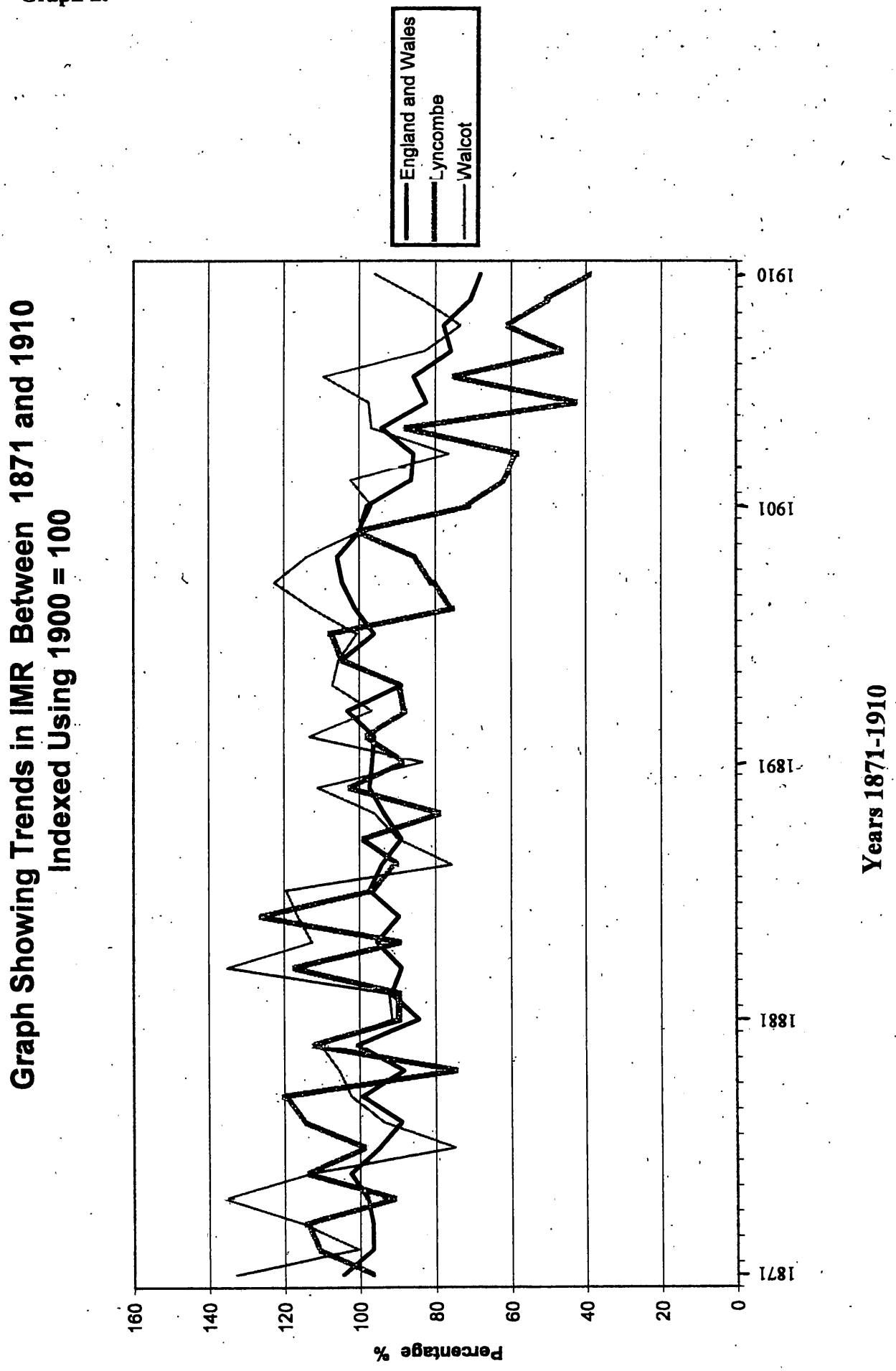
proved, so caution must be exercised when using the Reports. Differences have also become evident when comparing Vaccination Registers with the Registrar General's Quarterly Returns. In the district of Lyncombe in 1892 the total number of births is 338 and deaths 42. According to the Registrar General's figures, 340 children were born and 45 died. This may be as a result of the way in which the information was compiled, but it is remarkable that the figures are so close, given that the Vaccination Registers only recorded deaths prior to vaccination.

The Census Enumerator's Books (CEBs) for Bath, covering the years 1871,1881 and 1891 have been used to calculate the number of properties inhabited and the housing density in particular streets or areas. One of the biggest problems encountered when undertaking this research was the accurate identification of addresses within the Dolemeads because there does not appear to be a consensus regarding its precise location and extent. In the Vaccination Registers, some entries include the word 'Dolemeads' whilst others, often only a few streets away, do not. The CEB for Lyncombe & Widcombe – 1891 (RG12/1933) has been used in conjunction with local maps, to compile a fairly comprehensive list of properties that stood within the area commonly referred to as the Dolemeads (Appendix 4.e). There are several maps of the city that show the Dolemeads for the period 1871-1911, including maps by the city surveyor marking the presence of sewage pipes. The accuracy of the maps cannot be guaranteed, because it is possible that some of the small cottages and outbuildings standing behind the main streets and terraces were not included, any references to these in directories or the Census were sometimes vague . Also, whilst existing maps were occasionally 'up-dated' this did not necessarily mean that they had been re-surveyed.

The Dolemeads was a part of Bath that most citizens would probably never have a reason to visit, which may explain why it is not included in any P.O.Directories prior to the

redevelopment that took place in the early 1900s. The Directories have been useful in confirming names, addresses and occupations if the entries for Lyncombe in the Vaccination Registers are illegible. Fortunately, the documents, maps and plans relating to the Dolemeads Housing Scheme are still available and they include rare photographs of some of the houses prior to demolition, together with the subsequent replacements. Some of this material was also reproduced in the MOH Report for Bath in 1907 (Appendix 4.h.)

Graph 2.



Source: Registrar General's Quarterly Returns

Infant Mortality in Bath 1871-1911

During the period 1871-1911, the overall infant mortality rate for Bath fell from 145 per 1000 live births to 68 (Appendix 1.b.), following a similar trend as the rate for England & Wales, although at a consistently lower level. Bath experienced the same steady decline in the numbers of infant deaths during the 1870s and 1880s, which was followed by an increase in rates during the 1890s, peaking in 1895. Unlike the national rate, however, the rise in Bath remained below the levels recorded for the previous 20 years. The decline resumed in 1901 and continued throughout the first decade of the twentieth century. The pattern of infant mortality decline was not uniform within each of the three districts in the city. The IMR figures for different locations can be indexed using 1900 =100 and expressing the results as a percentage of the base figures (Graph 2.) From the graph it the, the infant mortality rate (IMR) in Walcot, the largest district, appeared to have followed the national trend with falls in the 1880s and a rise during the next ten years, before falling again at the turn of the century. In the district of Lyncombe & Widcombe, however, a different pattern emerged. A comparison of the IMR for Lyncombe with the national rates shows close similarities between the rates for the years 1871-1885, although Lyncombe recorded higher than average mortality in 1878,1883 and 1885. Without these rises in the IMR, the overall rate for the period would have remained consistently below the national figures. An examination of certain factors within specified years, such as flooding and outbreaks of infectious diseases may provide an explanation for these unexpected increases. The most striking feature is the difference between the two rates from 1886 onwards, with the gap widening further after 1896. It would also appear that the increase in mortality during the 1890s was below the rates experienced in the previous decades and the overall decline became even more marked after 1900. Lyncombe, therefore, was untypical in its pattern of infant mortality decline when compared with the average across the country and

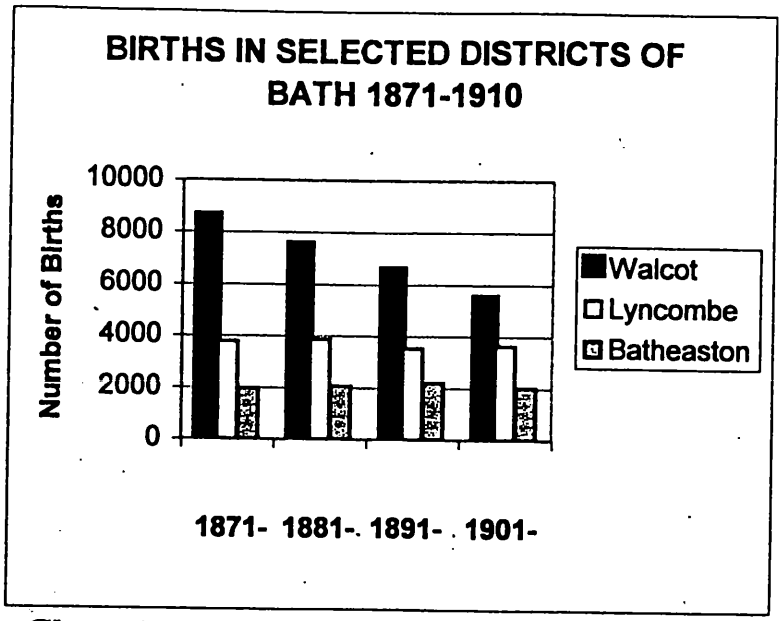


Chart 1.

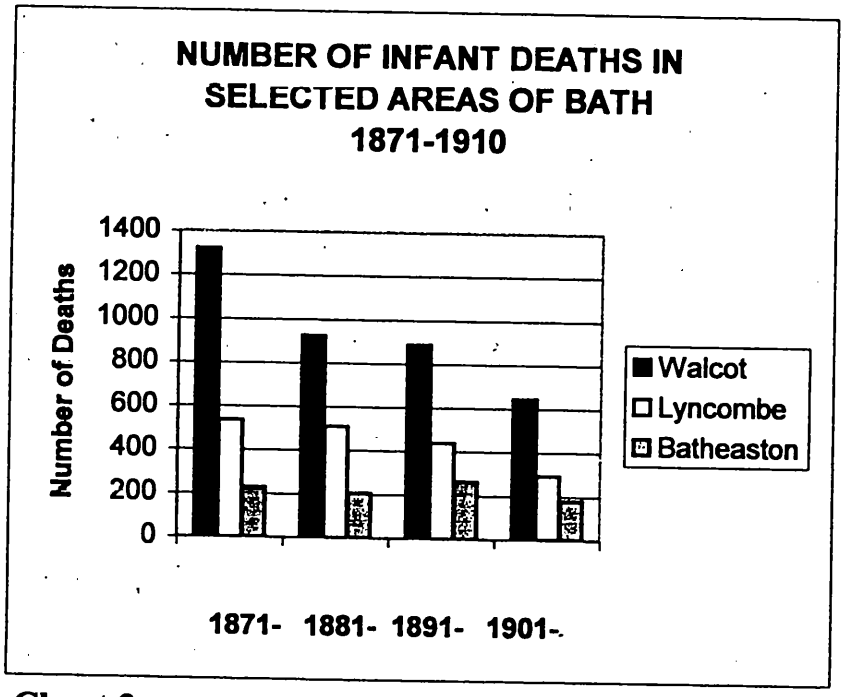


Chart 2.

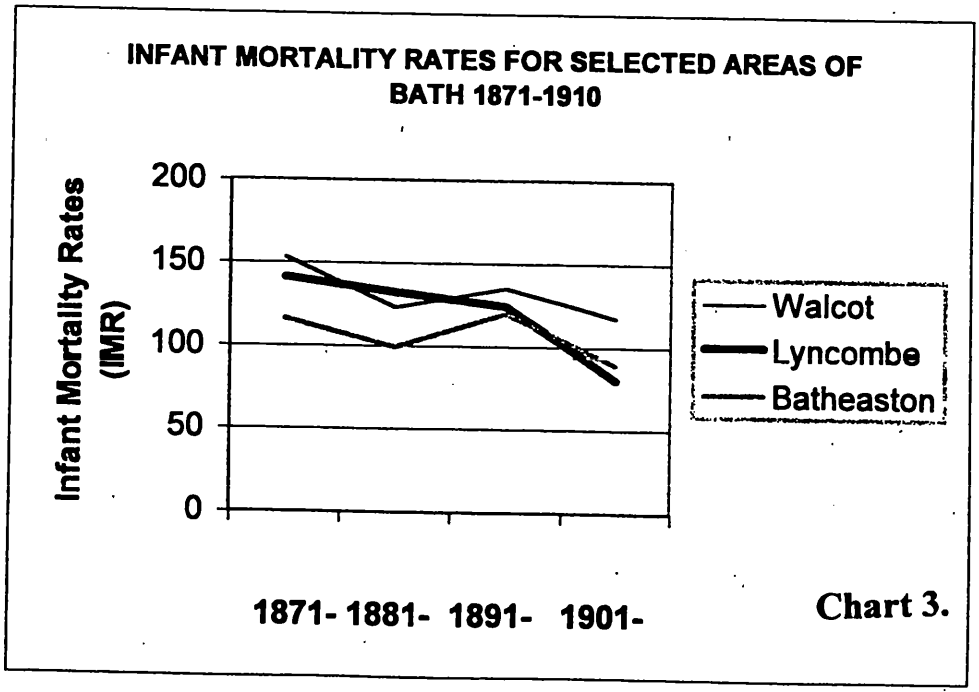


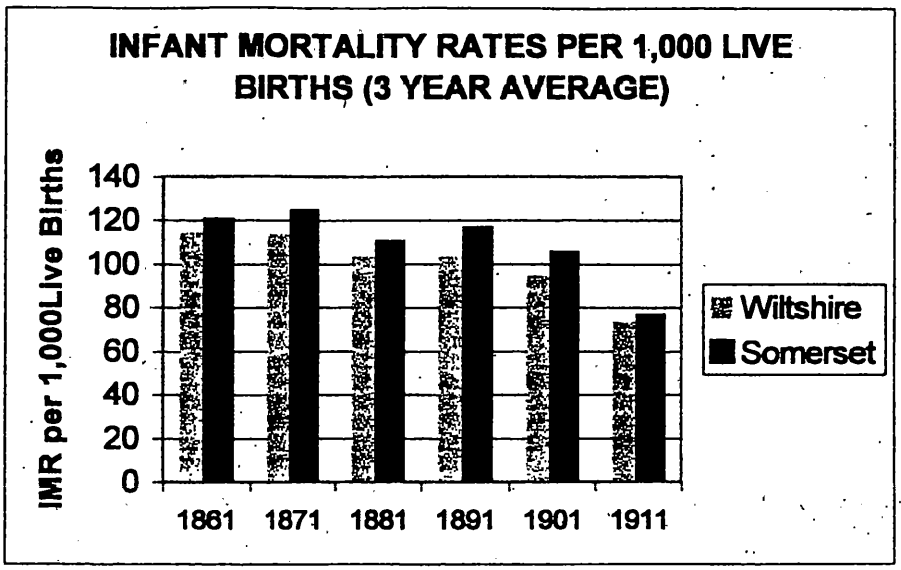
Chart 3.

Source: Registrar General's Quarterly Returns

even within Bath itself. This is further confirmed when examining the numbers of births and infant deaths recorded for the various districts in Bath (Chart 1.) In Walcot, there was a 23% fall in the number of infant deaths between 1871 and 1910, whilst the number of recorded births fell 36%. The IMR fell to 123 per 1000 live births between 1881-1890, then increased to 135, lower than the previous highest rate (1870s IMR=153), before falling to 117. The sub-district of Batheaston is included for comparison because it comprised several rural parishes (north and east of the city). Although the IMR was consistently lower there than for the inner-city districts, it appeared to follow a similar pattern as Walcot, with the exception of the 1890s when the IMR rose to a higher level than previously, before falling to 89 per 1,000 live births in the years 1901-1910. Whilst the numbers of births in Lyncombe remained fairly constant throughout the period, the number of infant deaths fell dramatically between 1901-1910, resulting in an IMR of 80, lower even than that in rural Batheaston at the same time and significantly lower than the national rate of 105 per 1,000 live births (Chart 3).

Several points have emerged from this data, firstly, the decline in infant mortality began as early as the 1870s in parts of Bath but a sustained fall in rates in all districts only occurred after 1900. Although there was a rise in rates in the 1890s, frequently attributed by contemporaries to a series of hot, dry summers, this was not uniform across the districts, with the rural sub-district of Batheaston recording a greater increase than inner-city Walcot. If the figures are correct, then it would appear that the underlying infant mortality rate for Lyncombe was declining throughout the whole period 1871-1911, with the greatest reduction taking place after 1900. It is interesting to compare the pattern of infant mortality decline in Bath with the figures for the whole county of Somerset and the adjoining county of Wiltshire (Chart 4). The IMR in Walcot and Batheaston was similar to that of Somerset,

Chart 4.



Infant Mortality Rates per 1,000 live births (3 year average)

	1861	1871	1881	1891	1901	1911
Wiltshire	114	113	103	103	94	73
Somerset	120	124	110	116	105	76

Source: Lee (1991)

with an initial fall in the 1870s and 1880s, followed by an increase in the 1890s and rapid decline after 1900. Lyncombe, however, followed a similar pattern to Wiltshire, where there was a steady decline throughout the period. The national IMR therefore, concealed differences both regionally, by county, as well as within the same city. The variations appear to confirm the findings of Lee (1991) who concluded that the overall fall in mortality rates was not uniform during the nineteenth century. After examining the pattern of decline across the country, he argued that the timing of the decline began as early as the 1860s in some regions, which was considerably earlier than first thought.

A number of different factors have been identified as having made a significant contribution with regard to both the levels of infant mortality and the timing of the decline in mortality rates. A selection of these have been examined in order to try to establish which of them had made the greatest impact on infant mortality levels in Bath and, specifically, Lyncombe & Widcombe.

Environmental Factors

Sanitation

During the nineteenth century several important surveys were published, such as those by Chadwick (1842) and Booth (1897), which raised greater awareness of the living and working conditions experienced by certain sections of the population. Investigations such as these highlighted the shortcomings in provision of sanitation and housing in urban areas that were ill-equipped to cope with the increasing demands of industrialisation . The belief that there was a correlation between high infant mortality and defective sanitary arrangements was given credibility by the comments of men such as Sir John Simon, Medical Officer to the Local Government Board (1871-1876),

> 'the death rates of young children are, in my opinion, among the most important studies in sanitary science ... their tender young lives....furnish a very sensitive test of sanitary circumstances, so that differences in infantine death-rate are, under certain qualifications, the best proof of differences of household condition in any number of compared districts'. (Simon 1887 p460)

The emphasis placed on the importance of improved sanitation can partly be explained by advances in the study of bacteriology during the last century and the advent of the 'germ theory'. Central to this was a better understanding of the nature of diseases and infections and the importance of preventable measures. In his domestic hygiene manual of 1880, sanitarian George Wilson concluded 'of far greater importance is to know that, whatever be the origin or mode of propagation of these diseases, they are to a very large extent controllable.' (Tomes 1990 p529).

After studying the nature of infectious diseases, public health authorities devised a new category – zymotic diseases - which included cholera, typhoid, diphtheria, smallpox,

measles and scarlet fever, because all were thought to have been caused by impure air and water. (Tomes 1990 pp517-518). The collection of data nationally meant that it was then possible to calculate mortality rates for specific diseases at different ages and locations. The enormous volume of legislation relating to public health and welfare between 1843 and 1918, illustrates the importance placed on such issues, together with the increased intervention of the State into everyday life.

Two significant pieces of legislation were the Local Government Act 1871 and the Public Health Act 1875 which saw creation of the Local Government Board and the compulsory appointment of a Medical Officer of Health (MOH) for each local authority. The Local Government Board was given the legal powers to implement the improvements in public health matters such as sewerage, drainage and the removal of nuisances. Whilst the principal role of an MOH was to act as an advisor and executive officer of his local authority in connection with epidemics of infectious diseases and with sanitation or, as Sir John Simon expressed it, 'for the redress of wrongs.' (Frazer 1950 p121). When overall infant mortality appeared to decline more rapidly in the early 1900s, those most closely involved in the provision of public health services attributed this to the success of the numerous initiatives. In 1908, Sir Arthur Newsholme, then Medical Officer of the Local Government Board, commented that the improvements were primarily due 'to improved housing, sanitation, the increased sobriety of the population and efforts concentrated on child welfare work.' (Frazer 1950 p330). Reviewing the fifty years of the public health movement in 1905, Dr John Tatham of the General Register Office, appears to have been more circumspect, warning that,

'It will be well to utter a caution at this stage against the prevalent tendency to attribute to the results of sanitary administration alone the whole of the life-saving which has taken place...' (Szreter 1988 p1)

Water Supply

The problems with water supplies in Bath were largely influenced by the underlying geology of the area. The city is sited upon several different layers of porous and impervious rocks, causing water to seep through the porous oolitic limestone layers and to emerge as springs where it meets the impervious layers. Inevitably, the water supply lower down the hill was susceptible to contamination by 'dead wells' (sewage pits), leaking sewerage pipes, cemeteries , pigsties and slaughterhouses. Apart from the springs and wells, the third main source of water was the River Avon. In the 1860s, the river remained the principal agent for the removal of sewerage, not only for the city but, as Dr Barter (1869) the MOH for Bath, pointed out, for ' the sewerage of seven towns before reaching Bath, whose aggregate population amounted in 1861 to 43,810 souls, besides several villages.' By the end of the decade only two thirds of the houses in Bath had a piped water supply, the remainder of the population used street pumps and wells. In reality, this often would mean having to transport buckets of water large distances , often from unreliable and contaminated supplies. Anecdotal evidence of the dilemma faced by many poorer households had appeared in Chadwick (1842 p141)

> 'A man had to fetch water from one of the public pumps in Bath, the distance from his house being about a quarter of a mile – "it is as valuable," he said, "as strong beer. We can't use it for cooking, or anything of that sort, but only for drinking and tea."
>
> "Then where do you get water for cooking and washing?" – "Why , from the river. But it is muddy, and often stinks bad, because all the filth is carried there".

In the summer of 1868, lengthy hot weather resulted in both of Bath's larger reservoirs being totally emptied, prompting renewed calls for a larger and more reliable supply. At the time, Dr Barter drew unfavourable comparisons between Bath and Manchester where 'every individual in that city has more that ten times the quantity of water which every

individual in Bath has.' (Davis & Bonsall 1996 p132). Epidemics of diseases, such as that of scarlatina in 1864, were increasingly linked with poor housing and overcrowding,

> 'generally, wherever scarlatina, or other contagious diseases exit, there will be found some nuisance or want of ventilation, or of a proper supply of water; or it may be, the water is impure from a dirty cistern or other causes. Impure air or water, or both conjoined, may, in the first place, produce disease, or be the medium of its diffusion, especially in an unfavourable atmosphere. Decomposed organic matter, in whatever form, especially that from the human body, being the chief cause of the specific poison carried into the sewers, and hence disseminated in the form of noxious gases, which only a thorough ventilation by means of a copious supply of water, and deodorising with lime will remove.'
>
> (Hanham 1864 p5)

Hanham, then Medical Officer to the Local Board of Guardians, calculated the mortality rates for both the city and rural districts, in order to illustrate the link between the proximity to the River Avon, poor housing and the incidence of scarlatina (Table.1.). Lyncombe and Widcombe had the second highest rate after Abbey district, which, according to Hanham (1864 p13) 'may in great measure be attributed to its being bounded in its entire length by the River, the greater portion of its poorer population living on the low levels or Dolemeads, where the drains etc., are not readily flushed and cleansed for want of sufficient water.'

Not surprisingly, the efforts of the City authorities to bring about improvements to the water supply were resisted by some ratepayers, who felt that they would have to meet some of the financial burden of the scheme. The public meeting held at the Guildhall was marked by 'clamour and violence' according to a report that appeared in *The Bath Chronicle* - April 12 1866. The reporter went on to comment, ' the articulate opponents of the Bill on

Thursday night did not seek to deny that a larger and more certain supply of water was necessary. They only contended that we were making a bad bargain; that we were paying an extravagant price for what we could get more cheaply if we waited another year.' Wealthy incomers to Bath had been attracted, in part, by the low rates, therefore any civic improvements which may have led to an increase was strongly resisted. (Davis & Bonsall 1996 p84) The comments of the Bath Association two decades earlier had proved strangely prophetic, 'few things prove more clearly the necessity of vigorous Parliamentary interference that the want of attention arising from want of power in various important matters pertaining to the sewerage of this City'. Finally, four years later, the passing of the Water Act 1870 enabled the corporation to buy out the different water companies in the city and to create a new, larger reservoir at Monkswood. (Fawcett & Bird 1996 p85).

Epidemics

In the late 1870s, the city received adverse publicity concerning comparative death rates and the frequent epidemics of scarletina, typhus, smallpox and other diseases. At the request of the Bath Urban Sanitary Authority, the MOH Dr Antony Beaufort Brabazon produced a *Special Report On the Average Rate Of Mortality in Bath especially for 1877 and the Winter Quarter 1878.* He calculated average mortality per 1000 at 21.6 by comparison with 50 other large town districts ranging from Dover (lowest) 15.5 to Preston (highest) 28.7. Average deaths under 1 year, per 1000 registered births were 158, compared with Cheltenham 170 and Northampton 213. (Appendix 2.d.) He roundly dismissed possible factors such as contaminated water and poor sewerage. Instead, he attributed the increase in mortality in children under 5 years, to convulsions, atrophy, bronchitis, pneumonia and diarrhoea, which he claimed, ' most frequently owe their fatality to carelessness, utter absence of precaution, undue exposure to vicissitudes of weather, improper diet, insufficient clothing, filth and deficient house ventilation.' With the exception of the latter, he

Table 1.

QUARTERLY STATISTICS.

	Mortality from all Causes per 1000 Annually.	*Zymotic Mortality per 1000 Annually.*
1st or Winter Quarter	23·6	2·04
2nd or Spring do.	19.2	3·4
3rd or Summer do.	13·04	1·3
4th or Autumn do.	14·5	0·5

	Per 1000.
Gross Average Mortality from all causes per Quarter	17·5
Average Zymotic Mortality per Quarter	1·7

Column No. 1 gives Annual Mortality from all causes per 1000 of population for last 5 years inclusive.

Column No. 2 gives Annual Zymotic Mortality for same period.

Column No. 3 gives Annual Infantile Mortality for same period.

Column No. 1.		*Column No.* 2.		*Column No.* 3.	
1884	19·8	1884	1·1	1884	3·1
1885	20·3	1885	0·5	1885	3·6
1886	21·1	1886	0·4	1886	3·2
1887	17·7	1887	0·3	1887	2·4
1888	21·7	1888	1·3	1888	2·7

Source: MOH Report for Bath 1888

QUINQUENNIAL MORTALITY.

Per 1000 *Annually.*

From all Causes.	*Zymotic Mortality.*	*Infantile Mortality.*
1890 ... 19·4	1890 ... 0·2	1890 ... 2·8
1891 ... 20·4	1891 ... 0·9	1891 ... 2·4
1892 ... 19·6	1892 ... 0·3	1892 ... 2·7
1893 ... 18·5	1893 ... 0·5	1893 ... 2·4
1894 ... 17·4	1894 ... 1·6	1894 ... 2·7

Source: MOH Report for Bath 1894

Table 2.

concluded, ' the Sanitary Authority can do nothing and those alone are responsible for this sad waste of human life by whose carelessness it is produced.' (MOH Special Report 1877) The Report itself was cleverly presented in order to allay fears and deflect criticism away from the city authorities. The estimated population for Bath that was given was actually higher that that later given in the 1881 Census. This would have affected the calculation of both birth and death rates. He also used *annual* rates of mortality but gave only specific data for just the Winter Quarter of 1878.

The gradual overall reduction in infant mortality rates in Bath in the early 1880s was reversed during the next ten years as a result of successive epidemics of infectious diseases, although the IMR did not return to the levels of the previous twenty years. In the years when the greatest flooding occurred 1882 and 1894, the zymotic mortality rates show a significant increase above the rates for the previous five years. Furthermore, while there was also a corresponding rise in the IMR for those years , the IMR was also high for years when there was a *reduction* in zymotic mortality 1884 and 1890 (Table 1 & 2). According to the MOH reports, the increase in IMR was as a result of outbreaks of airborne diseases such as scarlet fever, measles and whooping cough. In 1894, nearly a quarter of all deaths of children under 1 year were attributed to these causes which probably accounted for the sharp rise in infant deaths in some districts such as Bathwick and Lyncombe, rather than being as a result of the heavy flooding. After the introduction of compulsory vaccination against smallpox, there was a corresponding reduction in the prevalence of the infection. If fewer cases occurred, then the risk of contracting it fell, which may have influenced parents when deciding whether or not to have their children vaccinated. The entries in the Vaccination Registers for Lyncombe show that the number of successful vaccinations fell by over half when comparing the data for 1872 and 1911. In 1872 a total of 86% of infants were vaccinated, compared with only 34% in 1911, when 149 exemptions

were recorded . This occurred at the same time that a branch of the Anti-Vaccination League was operating in the city.

In order to assess whether the quality of the water supply was a significant factor in levels of IMR, it would be logical to look for a reduction in the rate after improvements had been made. From the graph of the IMR for Bath between 1871 and 1910 (Graph 1.), the five year moving average shows that the underlying rate for deaths under 1 year *did* fall between the early 1870s and the late 1880s, which could possibly be attributed to improved sanitation. An examination of the two largest sub-districts next to the river reveals several important points (Appendix 1.f.). In Walcot, there was a sharp fall in the number of infant deaths during this period, with the IMR falling from 153 to 123 deaths per 1,000 live births. The number of births, however also declined, making it difficult to gain an accurate picture of infant mortality. By contrast, the number of births in Lyncombe was higher than during the previous decade, yet the IMR had fallen from 141 to 132 deaths per 1,000 live births.

Another critical test of the improvements to the water supply is the level of mortality in the late 1890s. Nationally, a series of long, hot summers had led to an increase in deaths attributed to diarrhoeal diseases. The IMR for Bath followed the national trend, peaking in 1895, followed by a steady decline after 1900. Again, however, differences can be found within the city districts. In Walcot, the IMR rose, despite the continuing fall in births (Appendix 1.f.). By contrast, in Lyncombe, the fall in births was matched by a corresponding reduction in IMR. Additionally, the IMR for each district reached a peak in different years during the decade. In Walcot, the highest mortality was recorded in 1898 (Appendix 1.c.); in Bathwick the number of deaths fell in 1898, peaking instead in 1894 (Appendix 1.d.). Whereas in Lyncombe, the highest mortality occurred in 1896 (Appendix 1.g.). It is possible that, given Bath's geology and topography, the unseasonal weather

may have had a particular effect on the water supplies in different parts of the city. It is more probable, however, that these differences were caused by other factors.

Flooding

An additional threat to households in the city was the ever-present risk of flooding. Statistics compiled by the MOH for Bath (1900) show that the most severe flooding occurred in October 1882 and November 1894. In 1882, the weekly newspaper *The Bath Herald* reported that 'the towing path bordering the River at the rear is covered by many feet of water, and the back kitchens of many houses are entirely submerged so that the occupants are prevented from entering them. The Dolemeads are surrounded by water and the bulk of inhabitants are there imprisoned, the water rising to the bedrooms.' (Appendix 4.k). The annual rainfall in 1882 was 42.294 inches, whereas the mean annual rainfall between 1866 and 1885 inclusive was 32.064 inches (Appendix 3.h.). At the height of the floods, the water level reached 12 feet 6 inches (1882) and 16 feet (1894) above the height of Pulteney Weir, which is 57.06 feet above mean sea-level (MOH Report for Bath 1900 p38-39). The MOH further noted that the population of the houses that were flooded was 6,000 people, so that ' at least 10% of the population of Bath may be said to live below flood level'.

Once again, the overall IMR for Bath during the years in question, concealed differences around the city. In Walcot, the number of infant deaths rose sharply in 1883, the year after the flooding, but there was only a small increase recorded for 1894 (Appendix 1.c.). In Bathwick, deaths rose steeply in 1894, almost twice as many as in the previous year (Appendix 1.d.) In Lyncombe, the rates were higher in 1883 and 1895, the years after the highest floods (Appendix 1.g.) This may have been a delayed result of any health problems caused by factors such as contamination of water supplies. An analysis of the distribution of infant deaths by season or quarter in this sub-district reveals interesting results.

(Appendix 1.k.) In 1883, mortality levels in both the second and fourth quarter were higher than expected. Whilst in 1895, second quarter deaths were at a higher level. Given the fact that the flooding in each instance had taken place during the previous Autumn, it would appear that this alone could not have accounted for these increases. In fact, the highest mortality recorded for Lyncombe was in 1885, a year when the River Avon did not flood. From contemporary newspaper reports (Appendix 4.l.), it is evident that the Dolemeads was particularly susceptible if there was any rise in river level. The underlying clay soil would become saturated, causing dampness in the poorly heated and ventilated properties. This problem was partially addressed during the redevelopment that took place in the early 1900s, when new streets in the Dolemeads were raised by up to thirteen feet in places, which was above the highest recorded flood-level. During the first decade of the twentieth century, the IMR for Lyncombe fell from 135 in 1900 to just 53 deaths per 1,000 in 1910, which coincided with the improvements in the Dolemeads. An examination of the Vaccination Registers reveals that, there were two years when the IMR in Lyncombe rose above 100 per 1,000 live births, in 1904 and 1906. This was due to higher than expected third quarter deaths, a phenomenon associated with higher temperatures and lower rainfall. The number of deaths in the Dolemeads alone would be too small to account for this increase, so it would appear that the cause was something common to the district as a whole, not only the area next to the river. (Appendix 2.g.)

Whilst overall numbers of deaths from zymotic diseases were falling during the nineteenth century, in reality this occurred more rapidly in the age groups above 15 years, children upto 5 years were still the most vulnerable to infection. The introduction of sanitary measures such as clean water and better sewerage may have contributed to the reduction in adult mortality, it does not appear to have been the most important factor with regard to the

later decline in infant mortality. Dr Brabazon, however, would probably have challenged these findings, when commenting on the low rates of zymotic mortality, he wrote,

> 'I think this statement will give great satisfaction to the Urban Sanitary Authority, as doubtless it should to the Public at Large, whose attention I hope may be called to the result of this crucial test of the Sanitary Condition of the city, and afford favourable evidence of the exertions of the Sanitary Authorities.' (MOH Report for Bath 1889).

More recently, researchers such as Frazer (1950 p247), have also questioned whether the introduction of sanitary measures, could account for the fall in rates which occurred within each social class, not merely in the poorest households. In reality, sanitary improvements were probably only efficient enough to cope with the grosser diseases of intestinal origin such as typhoid, cholera and dysentery, which mainly affected older age groups. According to Thomas McKeown (1976) this could not, however, account for the decline in the air-borne diseases such as measles, smallpox, tuberculosis and diphtheria that also occurred. Yet the rapid expansion of the urban population had created the ideal conditions for the spread of infectious diseases. In his opinion, the reduction in overall mortality was the result of a general increase in the standard of living, especially the improved quality of nutrition, and improvements in the quality of water and food, rather than from any medical intervention.

The Domestic Environment

Housing

The so-called ' McKeown theory' (1976) has recently been challenged on the grounds that he too readily dismissed some of the wider issues such as the impact of the increased provision of public health & welfare services and alterations within the domestic environment. Szreter (1988) points out that McKeown overlooks the fact that deaths from bronchitis, pneumonia and influenza actually *increased*, so that by the turn of the century they had become the single most important cause of infant deaths. Furthermore, he argued, exposure to airborne diseases was affected by the general level of crowding and ventilation in domestic or working environments. In urban areas, the existing housing stock was often inadequate to cope with the rise in population. As a result, many people were obliged to live in totally unsuitable accommodation without access to sufficient water, light or fresh air. Any reduction in mortality, therefore, would have been as a result of legislation relating to these areas. Szreter cites the rise in the bronchitis group of airborne diseases as evidence of the outcome where preventative legislation was not forthcoming, 'clean air was one obvious omission from the nineteenth century sanitary reform arsenal and one need look no further than the appalling urban smog to explain such anomalously high levels of respiratory disease in the Victorian period.' (Szreter 1988 p27). Developments effecting the working-class home environment were taking a noticeable affect by the beginning of this century. The housing stock was improved by demolishing the worst slums and replacing them with either municipal or private housing schemes. During the house-building boom between 1897 and 1907, all new houses were required to provide minimum standards of sanitary and hygiene facilities.

According to the Census Reports the total population of the city of Bath fell by 8% between

Table 3.

Parochial Population and House Density.

Civil Parish.	Houses, 1801. Inhabited.	Uninhabited.	Building.	Population, Census, 1891. Males.	Females.	House Density, 1891.	Houses, 1897 Inhabited.	Uninhbd
Bathwick	797	66	—	1,594	3,120	5·91	757	94
Lyncombe & Widcombe	2,581	161	36	6,344	7,426	5·33	2,711	162
St. James	614	52	—	2,025	2,733	7·75	645	26
St. Peter & St. Paul ...	234	83	—	686	982	7·13	302	9
St. Michael	342	88	1	820	1,215	5·05	442	16
Walcot	4,365	345	49	9,656	15,243	5·70	4,599	335
Bath, County Borough	8,933	795	86	21,125	30,719	5·80	9,456	642

Table 4.

Housing Density in Bath Between 1861-1901

Year	Housing Density
1861	6.552
1871	6.307
1881	5.924
1891	5.804
1897	5.692 estimated
1901	5.64 estimated

(Source: MOH Report for Bath 1897)

Table 5.

Housing and population statistics for the Dolemeads in the Census Returns for Bath - 1871, 1881, 1891

Year:	**1871**	**1881**	**1891**
No. of schedules:	535	569	537
Inhabited:	418	455	454
Uninhabited:	9	11	11
Tenements < 5 rooms:	Figures not available	Figures not available	437
Population:	2039	2180	2174
Males:	971	1047	1079
Females:	1070	2180	1095

Source: Census Returns for Lyncombe, Bath

1851 and 1901 from 54,240 to 49,839. (Appendix 3.f.). What these figures do not reveal, however, is the rapid expansion of the suburban parishes that took place and the shift of people within the city boundaries westwards and southwards (Fawcett & Bird 1994 p88). The Census Reports for 1871 and 1891 give the population of the Registrar's District as 69,591 and 75,196 respectively. As a result, two parishes within the Rural Sanitary District, Twerton and Weston, were officially encorporated within the city boundaries at the beginning of the twentieth century. The aggregate population of Twerton and Weston had grown from 6,046 in 1851 to 17,025 by 1901. If these are added to the total population, there was actually an overall *increase* of approximately 10.9% during the same period

Bath's housing problem may not have been as great as that of larger industrial cities, nevertheless, there was a demand for adequate housing at an affordable rent. In 1851, a total of 11,647 people lived in 1,349 houses in the inner-city parishes (Davis & Bonsall 1996 p111). The position of these parishes in relation to the course of the River Avon prevented further expansion from taking place. In 1891, the house density figures for the inner-city parishes of St.James, St Peter & St Paul and St Michael (incorporated within the Walcot district for administrative purposes) remained significantly higher than for those further from the city centre (Table 3 & 4.) The MOH attributed the overall reduction in housing density as 'owing to the constant improvement in the social condition of the lower classes'. (MOH Report 1897 p15). The prosperous commercial and professional classes were the first to move to detached and semi-detached villas on the outskirts of the city, whilst the better-off working classes could afford the new terraced artisan dwellings in the Oldfield Park area within the district of Lyncombe & Widcombe. (Appendix 3.i.) By contrast, only 18% of the new houses built in Bath between October 1899 and October 1900 were located in the three central parishes of the city. One outcome of the rapid suburban growth was the increased geographical separation of the different social classes,

with the poorest remaining in the areas closest to the river. It is possible, however, that this movement within the population resulted in less crowding in these areas. Further investigation would be needed to substantiate, using the 1901 Census when it becomes available.

Private initiatives to improve conditions for the less well-off had started as early as the 1850s, however the greatest improvements followed the passing of the Housing of the Working Classes Act 1890. After the devastation caused by the extensive flooding experienced in 1894 the Dolemeads was considered a prime location for redevelopment. Dr Brabazon, the MOH for Bath, was well aware of the difficulties faced by both tenants and property owners,

> 'Doubtless there are many houses in the Dolemeads very faulty in construction, and this kind of house property might be comprised within a certain area, but this property is in the hands of many, and generally poor, proprietors, who would be quite unable to carry out any proposed structural arrangements at their own expense, and were I, as Medical Officer of Health, to condemn these houses as 'unfit for habitation', what is to become of the evicted tenants? They would go to 'overcrowded' tenements just as bad in other parts of the city, and the 'last state would be worst that the first'. (MOH Report for Bath 1894 p17).

The 1891 Census for England included the number of tenements with less than 5 rooms, in each district. Having extracted the relevant data for the Dolemeads, the extent of the problem faced by Dr Brabazon becomes more apparent (Table 5.). A population of 2174 people occupied a total of 454 properties, giving the average number of persons per household as 4.7,. a figure similar to the two previous Census Reports. If, however, this

figure is calculated on the basis of the number of tenements, then it rises to 4.9, which is probably a more accurate figure. The higher number of schedules than properties is also an indication that they were occupied by more than one household. The majority of the population of the Dolemeads, therefore, lived in properties with fewer than five rooms.

The first step to improve conditions, therefore, was to provide decent affordable housing for those who lived in condemned properties. A scheme for building small houses was approved in September 1898 but did not actually begin until the necessary loan of £10,500 had been granted the following year. Notably, this project was the first ever council-house building scheme in the city. Some of the worst terraces and cottages were demolished and the site was raised as much as thirteen feet in places to avoid further flooding. The first seven houses in Archway Street were ready by the summer of 1901, this was followed by the construction of Excelsior Street and by 1907, a total of 42 new homes had been erected. (Appendix 4.j.).

From the Vaccination Registers it appears that there was a small decline in the numbers of births recorded for the Dolemeads in the years 1872 and 1911. In 1872 some 22.6% of all births in Lyncombe & Widcombe were in the Dolemeads but by 1911 this had fallen to 10.6% of total births. (Appendix 2.f.). The Vaccination Registers also confirm the expansion of suburban areas within the district such as Oldfield Park, because entries for this area started appearing at the turn of the century. During the 1880s and 1890s, Lyncombe & Widcombe had the highest birthrate in the city but only the second highest mortality rate, after Walcot. Between 1897-1899 the annual mortality rate for Bath was 15.1 per 1,000; Walcot (16.5); Lyncombe & Widcombe (12.1); Bathwick (11.2) From data in the MOH Report for Bath (1907) (Table 6.), a total of 117 infant deaths were recorded in the Dolemeads between 1866-1876. Whilst this was lower than deaths in the Avon Street area (situated next to the river in the neighbouring district of Walcot), as might

Table 6.

Deaths and Mean Annual Death-rates.
Various Streets. Ten years 1866—1876.

Street.	Population 1871.	Infant Deaths 10 years.	Total Deaths 10 years.	Death-rate. per 1,000.
Avon Street ...	1111	91	267	24·0
Milk Street ...	364	26	89	24·4
New Quay ...	118	5	9	7·6
Little Corn Street ...	155	10	25	16·1
Corn Street ...	379	26	93	24·5
Peter Street ...	307	24	89	29
Six Streets ...	2434	182	572	23·5
The Dolemeads ...	?	117	397	
Marlborough Buildings	226	0	22	9·7
Royal Crescent ...	257	2	31	12·0
Park Lane ...	31	0	6	19·4
Three Streets ...	514	2	59	11·5
City of Bath ...	52,528	?	12,050	23

Births, Birth-rate, Infantile Mortality.
Deaths at all ages and Death-rates.
Various Streets. Nine Years 1899—1907.

Street.	Population 1901.	Births.	Birth-rate.	Infantile Deaths.	Infantile Mortality.	All Deaths.	Death-rate.
Avon Street ...	851	213	27·8	37	174	149	19·5
Milk Street ...	324	112	38·4	23	205	62	21·2
New Quay ...	98	37	41·8	8	216	19	21·5
Little Corn Street	109	27	27·5	7	259	20	20·4
Corn Street ...	221	70	35·2	12	171	47	23·6
Peter Street ...	233	57	27·2	10	175	39	18·6
Six Streets ...	1,836	516	31·2	97	188	336	20·3
The Dolemeads...	?	548	—	63	115	238	
Marlborough Bdgs.	202	0	0	0	0	19	10·5
Royal Crescent ...	206	5	2·7	0	0	21	11·3
Park Lane ...	30	1	0·4	0	0	5	18·5
Three Streets ...	438	6	1·5	0	0	45	11·4
City of Bath ...	40,839	8,803	19·6	960	109	7,076	17·1

Source: MOH Report for Bath 1907

be expected, this figure was still considerably higher than those recorded for the wealthier locations around the Royal Crescent in Lansdown. In the period 1899-1907, however, the number of infant deaths in the Dolemeads had fallen by almost half to 63. Interestingly, the number of births registered was also higher than that in the Avon Street/Corn Street area at 548, giving an infantile mortality of 115, only 6 above the total for Bath (109) but much lower than the figure for Avon Street/Corn Street (188).

According to local researchers, (Davis & Bonsall 1996 p111), the downward trend of mortality in all districts of Bath was aided by the movement of population away from the unhealthy central and low-lying districts to the less crowded and better-housed suburbs. In the case of the Dolemeads, the Vaccination Registers reveal an improvement in infant mortality figures which appears to have coincided with the programme of slum clearance and the erection of new houses (Appendix 2.g.). The movement of some families to the newly constructed terraces of Oldfield Park could also have been a significant factor, leading to less crowding. One way to establish whether there was a correlation would be to do further research into the IMR in the Dolemeads for the decade preceding the improvements, together with the IMR for Oldfield Park after 1900, in order to compare results. In Bath as a whole, the IMR declined rapidly after 1900, a pattern followed by Lyncombe although its population was increasing. The rate in Walcot, however, did not begin to fall until after 1903, despite the reduction in population. In Bathwick, the rate had already begun to fall in the late 1890s, when there was little change in overall population. Despite the improvements to housing which may have improved life for some in the Dolemeads, in reality, many still remained in unsanitary, overcrowded conditions. Louie Stride was one such person. Born in 1907, she was raised in poverty by her mother. In later life she recorded her eventful childhood in a book entitled *Memoirs of a Street Urchin (1983)*. She graphically described the hardships faced by both her and others who

struggled daily to survive. In 1917 she lived in the Dolemeads for a short time, describing it as 'a real slum' where there were 'some houses quite uninhabitable, in fact some were just rubble, then one or two good ones, and across the road the same.' (Stride 1983 p27). Although this is after the period being studied, it serves as a reminder that all of the problems in the Dolemeads were not immediately solved by the provision of a few new houses.

Nature & Nurture

The overall increase in infant mortality rates for the country as a whole that took place during the 1890s was attributed to a rise in deaths from diarrhoeal diseases. It has been argued that this not only served to emphasise the more rapid fall that took place after 1900, but it also disguised the fact that infant mortality decline actually dated from as early as the 1870s and 1880s in some locations. (Woods *et al.* 1988). A series of long, hot summers had created the ideal conditions for the transmission of diarrhoeal infections, which accounted for nearly a quarter of all infant deaths alone (Woods *et al 1988 p360).* Edward Ballard, Inspector to the Local Government Board (1871-1890), believed that there were three fundamental causes in the production of epidemic diarrhoea, namely, soil, season and food. After taking recordings of the four foot earth temperature, he observed that the summer increase in Infant Diarrhoeal Mortality (hereafter referred to as IDM) when the temperature rose to 56 F. Woods *et al.* (1988) noted that although infant diarrhoeal mortality was higher in urban industrial areas than in rural ones, this was not uniform across the country. In the most densely populated cities such as London, Liverpool and Birmingham, infant mortality levels soared, causing the national levels to rise. Whatever improvements were made to urban environments regarding clean water and better sewerage, this alone could not overcome what is termed the 'urban-sanitary- diarrhoeal effect'. In poorer areas, livestock such as pigs were kept in close proximity to houses and

some slaughterhouses also conducted their business within densely populated areas. The combination of accumulated filth and hot weather provided the ideal conditions for flies to breed, contributing to the transmission of diarrhoeal infections. One example of this was included in the MOH Report for Bath of 1873 by Dr Barter, who noted that, 'At 3, Bridge Place, Dolemeads, is a pigsty immediately behind the back entrance between it and the river. This is an objectionable locality for pigs'. Sir George Newman, then MOH for Finsbury concluded that epidemic infantile diarrhoea was due to an infection, 'which must be conveyed by food or perhaps chiefly by liquid food.' (Walker-Smith 1996 p215) As milk was the primary nutrient of infants, it was investigated as the most probable cause of infection (Dwork 1987 p51). According to Newman, 'unclean milk is almost a solution of bacteria and little short of rank poison to an infant' (Walker-Smith 1996 p215).

It was believed that the specific problems relating to defects in living conditions could be partially addressed by the implementation of the new legislation by the local authorities. This included the inspection of properties, removal of nuisances and greater regulation of the sale of food and the keeping of livestock. Of equal importance, however, was a belief in the necessity to educate concerning the importance of hygiene within the home. According to Sir Arthur Newsholme, 'The chief means for a lower infant mortality are efficient domestic and municipal sanitation, good housing and intelligent and painstaking mothering.' (Woods, et al. p 119) However, in Newsholme's model of possible factors influencing IMR (Appendix 5a), he does not demonstrate the interaction between these particular factors. More sophisticated models (Appendix 5.a. 5.b.) show the complexity of the relationship between factors. Newsholme was commenting at a time when attitudes towards a woman's role in society were very clearly defined.

A modern commentator has concluded that, one feature of the nineteenth century was the promotion of an ideology of motherhood 'that invested family life, particularly child rearing, with enormous moral and social significance.' (Tomes 1990 p511) Subsequently, measures

to improve domestic hygiene, were largely targeted at women. In 1906, at the First National Conference On Infant Mortality held in London, Sir Arthur Newsholme, Medical Officer of the Local Government Board, felt that the solution to infant mortality required a synthesis of a number of elements, central to which was the home and the mother. (Frazer 1950 p330) The President, John Burns, exorted the delegates to 'glorify, dignify and purify motherhood by every means in our power.' (Frazer 1950 p332). The methods employed to achieve these aims, however, may well have involved a different strategy, for it has been noted that 'in an era of high infant and child mortality, the domestic sanitarians forged a powerful association between guilt and responsibility for infection.' (Tomes 1990 p539). At first, private initiatives led the way in educating and supporting new mothers, including organisations such as the Ladies' Sanitary Association and Baby Welcome Societies. (Smith 1979 p114) Among some working-class mothers, however, there was hostility and suspicion, because of the interference by predominantly 'middle-class' people in their lives. One of the recommendations of the Committee on Physical deterioration (1904) had been the appointment of Health Visitors to instruct mothers on aspects of child welfare, particularly in poorer areas. In the opinion of Dr Barclay, the MOH for Weymouth in 1905, the yearly 'slaughter of the innocents is due to ignorance and neglect... mothers need to be educated in rearing and feeding of infants and domestic hygiene' (Hawker 1988 p40) The MOH for Warwickshire (1903) went even further, 'I believe in this new departure of carrying sanitation into the home we have not only an important, but also the only means of further improving the health of the people.' (Fraser Brockington 1956 p39) Nationally, the expectations raised by the creation of Health Visitors were, therefore, great.

In Bath, a branch of the Wakefield Babies' Welcome Society was opened in 1907, followed by the Baby Visiting Society in 1909. The Annual Reports of both societies, included in the MOH Reports for Bath, give an indication of both the type of work undertaken and the relationship between the voluntary and the professional Health Visitors. The purpose of the

Baby Visiting Association was to continue monitoring the progress of those children, between the ages of 1 and 3, who had previously been under the care of the Health Visitor. Not only did the Reports include data relating to the health and cleanliness of the children, but also the condition of the rooms that they occupied. What is not known, however, is the standard by which each criteria was judged, nor the feelings of the mothers being 'visited'. The final paragraph in the Annual Report of 1912, however, provides a valuable insight into the motivation of the Association's members.

> 'The Committee earnestly wish to commend this work not only as a piece of social work tending to decrease the infant mortality of the City...but also as one which brings the visitors into intimate contact with their poorer sisters. There hardly exists a mother who will not open out in talking over her children with someone whom she feels to be interested, and thus we get an entry into homes and make friendships which help to break down the social barriers between the poor and ourselves.'
>
> (MOH Report for Bath 1912 p23.)

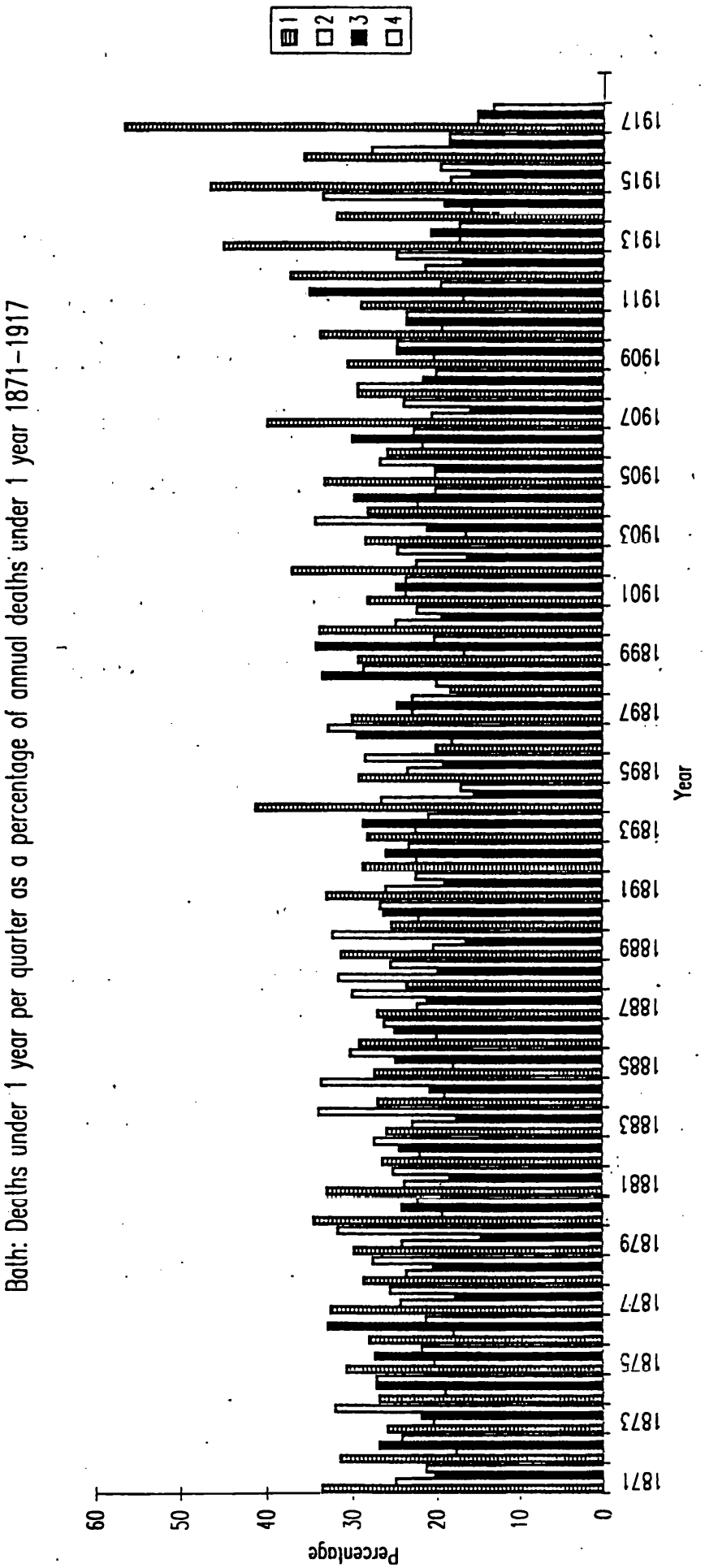
The public health campaign relating to infant feeding had three principal aims, namely, the promotion of breast feeding, the establishment of clean milk supplies and, lastly, the provision of a suitable substitute for mother's milk. In 1905, a study on the influence of feeding on infant mortality appeared in *The Lancet* (Howarth 1905 p210). It was found that for every 1,000 breast fed infants, 65 died under the age of 1 year. For infants who had been artificially fed, this rate increased to 200 per 1,000 live births. Mothers were advised to breast feed their babies until they were at least 9 months old as infants whose mothers were either unwilling or unable to breast feed were placed at greater risk from both nutritional deficiencies and contaminated food. The pressures of economic necessity on working women forced them to abandon breast feeding, in order to resume work as soon as possible after confinement. Breast feeding was also uncommon at the opposite end of the socio-economic scale, however this was for social and cultural reasons. With the decline in

the employment of 'wet nurses', wealthier families probably relied more on proprietary brands of baby food which, ironically, caused similar health problems to those experienced by children in less well-off households.

Before cow's milk was identified as a possible carrier of disease, there was no regular inspection of herds and milk was transported into towns in open-topped containers and sold in the street where it could be contaminated by dust and dirt. Evidence exists to show that vendors had been prosecuted for diluting the milk with water from impure sources, which even included a horse trough (Anderson 1996 p167). The greatest changes to the dairy industry came at the end of the nineteenth century when several Acts of Parliament were passed that were designed to improve the hygienic standards of milk production and distribution (Mepham 1993 p225). The introduction of new cooling plants, pasteurization and bulk transportation meant that greater quantities of 'safe' milk was available in towns, although not everyone could afford to buy it. Initially, this problem was partially addressed by the development of milk depots, an idea first pioneered in France, where sterilized and pasteurized milk was supplied at low cost to poorer families. By 1907, however, many of these depots had begun to abandon this practice in favour of supplying dried milk powders, which were becoming more widely available (Mepham 1993 p249).

The cheapest source of milk for infants was tinned condensed milk made from evaporated skimmed milk with added sugar (sometimes as much as 40%). Many mothers, partly through poverty, partly ignorance, fed this to their babies in the belief that 'machine skimmed' meant that it was purer than other types of milk. Although babies put on weight, according to one contemporary report they were 'pale, lethargic and flabby, have little power to resist disease, cut their teeth late and are likely to drift into ricketts before the end of their first year' (Anderson 1996 p170). Condensed milk was successfully marketed as being safer than cow's milk because it was free from bacteria and germs. In reality, once

Chart 5.



Source: Registrar General's Quarterly Returns

opened, the milk was equally susceptible to contamination, particularly before the widespread use of refrigeration. Disquiet among the medical profession and the Report of the 1894 Select Committee on Food Products Adulteration eventually resulted in the compulsory labelling of condensed milk as being unsuitable for babies (Drummond & Wilbraham 1957 p377).

In Bath, the numbers of deaths recorded annually from diarrhoea was considerably below the average for England & Wales. Between 1885-1910 the average third quarter infant mortality rate was only 106 per 1,000 compared with large centres of industry such as Preston (274), Leicester (256) and Newcastle (212) (Appendix 1.h.). During the 1890s the overall number of deaths during the winter and autumn quarters continued to exceed those for the summer quarter (Chart 5.). This pattern remained consistent throughout the period with the exception of the years 1898 and 1899, when a rise in IMR was attributed to an increase in deaths from diarrhoeal infections. Dr Symons, the MOH commented on this unusual occurrence in his Annual Reports, 'Deaths from diarrhoea were very much in excess of our usuual number from this cause, and our death rate does not rise in the autumn as it does in towns where a considerable number of the young mothers are employed in factories.' (MOH Report for Bath 1898). An analysis of the four-foot earth temperature between June and September revealed that deaths occurred when they reached 60F. There was also very little rain in August and September, coinciding with the highest temperatures for that year (MOH Report for Bath 1898 p20). A total of 37 deaths from diarrhoeal diseases were recorded, 29 of which were children under one year. Further enquiries into the methods used to feed 26 of these children revealed that 10 were fed on unboiled milk; 6 on boiled milk; 4 condensed milk; 3 cow's milk;3 breast-fed. Of those being breast- fed the mother of one had milk fever, the father of another had died at the same time of Bright's disease and the third had thrush. Eighteen of the deaths were in September when, Dr

Symons observed, there was little rain and both air and earth temperatures reached their maximum for the year; unseasonal conditions because September was usually one of the wettest months. In the following year 30 deaths were recorded for children under five years, most again occuring in September. In the district of Lyncombe the number of deaths recorded during the third quarter of 1898 was slightly lower than the average that might be expected for that time of year but during 1899, the figure was considerably higher than expected. (Appendix 1.k.). This was despite the efforts of the Sanitary Authority who sent leaflets concerning the feeding of infants to every household where a child had been born during the year. In addition, Mr Davis, the sub-registrar for Lyncombe & Widcombe, also gave out a similar leaflet to everyone registering a birth in that particular district. (Appendix 2.e.).

During the early twentieth century the third quarter deaths in Lyncombe for the years 1906 and 1910 were also in excess of expected levels (Appendix 1.k.). In England, the highest number of deaths in 1904 and 1906 also occurred during the third quarter. In 1910, however, the infant mortality was higher in the first and fourth quarters, which differed from the figures for Lyncombe. In fact, in Lyncombe, the number of deaths recorded for the rest of that year were lower than expected, a total of 20 out of 374 births. This gave Lyncombe the lowest IMR =53 deaths per 1,000 live births, for the period 1871 – 1910. In 1904, out of a total of 11 deaths recorded prior to vaccination, five were in the second quarter, compared with 3 in the third quarter. In the Vaccination Register for 1906, there were only 3 deaths recorded before vaccination, two of which were in September. If the results from the years when third quarter deaths exceeded expected levels are removed from the overall statistics, as suggested by Woods *et al.*(1988), then the decline in the IMR would appear to have been even more remarkable. The appointment of the first lady Health Visitor in 1907 was significant because information on methods of infant feeding was

gathered for inclusion in the Annual MOH Reports. In the first of these after she began working, it was noted that she had visited 271 out of the 500 infants born and that 'many women have been induced to continue the breast feeding of infants, who would otherwise be giving them improper food.' An estimated 80% of the mothers seen had breast-fed up to 4 months and 60% up to 8 months (MOH Report for Bath 1907 p11). Better education of mothers on infant feeding would have had a positive affect on the reduction of infant deaths, but this cannot have been the most important factor, as these initiatives were not widely introduced until the beginning of this century, when IMR rates were already declining. Instead, it is possible that this, in conjunction with other initiatives, increased the speed of decline.

Socio-economic Status

The pace and timing of infant mortality decline also appeared to vary within different occupations and social classes. Haines (1995) proved that a positive correlation existed between these variables between 1896-1911 when the overall IMR for England & Wales was declining. (Appendix 1.f.). The lowest mortality was amongst the families of professional workers in Class I, whilst the highest rates were recorded for children born to miners, textile workers and those in Class V (unskilled occupations). The IMR within families of professional workers almost halved between those years (from 101.5 – to 55.1), whilst the IMR amongst miners fluctuated considerably and in 1911, was nearly three times as high as the rate for professionals. (miners=160.0). There was a similar disparity between the IMR for children born within social classes I & V, where the rate for the latter (153) was double that of the former (76.0) . These findings were consistent with those of Watterson (1988 p297) who has calculated the relationship between annual income and mortality decline. Families in the highest income group (also in Class I) saw the most dramatic decline because they could afford adequate food, shelter and medical attention. At

lower incomes, however, average infant mortality decline was not highly correlated with income level. Increasing income on its own, therefore, would not necessarily produce a steeper decline in mortality. Mine workers, for example, were highly paid in relation to many workers but had the highest IMRs. Watterson (1988 p302) concluded that because the greatest reduction in rates was among urban occupations, it was the improvements that took place within these that were most influential, but that high or regular income enhanced the effect.

Whilst acknowledging the importance of sanitation and better water supplies, Thomas McKeown (1976) considered that the improvement in the standard of living, leading to better nutrition, was the most important factor in mortality decline. He argued that 'a population better fed, if not adequately, was able to face the risks of increased exposure to infection.' Between 1873-1896 wholesale prices fell by 45%, reducing the cost of living by nearly a third. Average money-wages over all trades rose by up to 5% which meant, in view of the fall in retail prices, a rise in real wages of 35-40%. As a result, the purchasing power of the average skilled worker in full-employment increased by a third. (Cole & Postgate 1981 pp441-442). The counter-argument to McKeown is that an increase in *per capita* nutritional intake alone would be of little use in reducing infant death, without education regarding appropriate feeding methods, together with a safe food supply, free from adulteration and contamination. (Szreter 1988 p31).

Contemporary observers went to great lengths to prove a positive correlation between high levels of infant mortality and working mothers. The question of whether married women should be engaged in work was a contentious issue, as it challenged the ideology of woman as mother and home-maker. Sir John Simon (1887 p469) considered it to be one of the two chief causes of infant mortality. He noted that there were 'certain large towns where women are greatly engaged in branches of industry away from homes; where consequently

these homes are ill kept; where the children are little looked after; & where infants who should be at the breast are improperly fed or starved, or have their cries of hunger and distress quieted by those various opiates which are in such request at the centres of our manufacturing industry'. His comments were echoed by the MOH for Staffordshire in an article on the employment of married women and infant deaths. (BMJ Aug.17 1901 pp410-412) The opposition to working mothers continued well into the 1900s, despite the lack of any real statistical proof. In his first Report on Infant and Child Mortality (1909-1910), Arthur Newsholme, Medical Officer of the Local Government Board, admitted that whilst he had no conclusive evidence, 'such employment must, however, tend on balance to increase infant mortality and to lower the health of older children in the same family.' (Dyhouse 1978 p260)

More recently, however, it has been argued that the extra income generated by working mothers could have made a significant impact on family income, depending on both the work undertaken and the level of income without this contribution. High levels of employment in both World Wars was consistent with major improvements in infant survival rates. (Winter 1982 p105).

In Bath during the last century, trade and small-scale industry formed the major sector of male employment in the city (Appendix 3.j.). The commercial sector accounted for nearly 12% of male employment in 1871 rising to over 19% by 1901. In the Registration District of Bath as a whole the male labour force grew by 35.3% from 9,409 to 12,734 between 1851-1900. The female labour force rose by 23% from 8,712 to 10,713 during the same period (Davis & Bonsall 1996 p68). Women employed as domestic servants mostly worked in the suburbs, whilst those in the clothing trades such as dressmakers, milliners and shoemakers, remained in the central parishes. No detailed study on wage levels in Bath has

been undertaken between 1850 & 1911. However an indication of the gradual improvement was the change in occupational structure. Firstly, there was an increase in employment in regular, if not better-paid, jobs in commerce and new industries such as printing and engineering. At the turn of the last century the largest employment sector was the building industry, employing over 2000 men and boys. (Davis 1988 p55) There was also a decline in traditionally low-paid trades such as shoemaking and casual labouring work. Finally, there was an above-average rise in the wages of domestic servants, which was important as it accounted for the largest single occupational group of women in Bath (Appendix 3.j.). The migration of young women into the city seeking employment, led to a large surplus in the female population. The breakdown of the occupational profile of the city in the MOH Report for Bath 1898 disproves the misconception that Bath had little or no industry but also reflects the city's popularity as a health resort because of the relatively high numbers living on their own means or employed in domestic service. Due to the absence of large-scale industries in Bath, employment opportunities for married women were largely restricted to occupations such as laundresses, charwomen and dressmakers. As a previous study has shown, most of these tended to be carried out within the home, enabling mothers to combine work and family obligations. (Hack 1994). In some parts of the city where men were mainly dependent on one particular industry for employment, a wife's financial contribution to the family income was vital. At Combe Down on the hills to the south of the city, for example, many men relied on the Bath stone industry for work, but because of the seasonality and insecurity of quarrying, no regular income could be guaranteed. In 1851 it is estimated that 86% of their wives supplemented their income by taking in washing, this fell to 75% by 1881 and 50% in 1891. (Addison 1998 p104). In the Post Office Directory of 1911 there are 14 entries in the village directory of Combe Down for men listed as masons, quarrymen and labourers, where their wives are also listed as having an occupation - 12 as laundresses and 2 as dress and mantle makers. Louie Stride

(1983) recalled the experiences of one mother trying to support her family in the Dolemeads,

> 'Apart from the flooding and continual dampness from that, most of the women took in washing. One woman who did a huge lot of laundry for a lot of the big houses had a big wooden contraption like a drum and a big stick to manipulate.....she was a genuine widow, but I don't think there was any allowance, if so very small I'd say. All the days of the week, children would be seen staggering with these big laundry baskets, one each side. The mothers also did charring in some of these houses, sixpence an hour now, not sixpence for a morning like my mother in 1909 and 1910.' (Stride 1983 p29).

In Lyncombe & Widcombe the principal occupations of the residents came within the categories of skilled and unskilled workers. In the Vaccination Registers for 1872, 1892 & 1911 the occupations where the largest numbers of births were recorded were labourers (33) , followed by stone masons (20) (Appendix 4.m.) In the Dolemeads between 1900-1906 a total of 104 births were registered to fathers who were labourers, with between 4 and 11 different types of labourer listed for each year, mason's labourer (41) being the most frequent. Despite the high numbers of semi-skilled and unskilled workers, the number of deaths recorded prior to vaccination fell during this period. (Appendix 2.g.). It is possible, therefore, that a correlation did exist between occupation and infant mortality in the overall reduction of the IMR. It is equally possible that no correlation existed and that income was not a significant factor in the reduction of infant deaths.

Family Matters

The birth rate in England & Wales dropped from around 35 births per 1,000 population in the mid-1870s to 28 births per 1,000 in the 1900s. This trend towards having smaller families during the nineteenth century is referred to as the 'fertility transition'. A heated debate, fuelled by the poor physical condition of many Boer War recruits and the prospect of a burgeoning working-class population, raised the threat of 'race suicide'. (Garrett & Reid 1995). In order to acquire more accurate statistics on the pattern of fertility and the underlying causes of infant mortality, extra questions regarding length of marriage, numbers of living children and the numbers of children who had subsequently died, were added to the 1911 Census. Reporting on the findings, T.H.C.Stevenson, of the General Registrar Office wrote, 'It seems probable that large families promote high mortality, and that high mortality promotes large families; but the separate effects of these influences remain very difficult to measure.' (Garrett & Reid 1995 p71). Woods (1987) proved that nationally, mortality did not necessarily have to fall first, before fertility would begin to decline. The latter occurred amongst the middle-classes in the areas where they were predominant, whereas industrial areas were the last to be affected. Garrett & Reid (1995) also concluded that the similarity in fertility levels across classes within environments suggests cultural factors were responsible for the reduced fertility, rather than economic ones. From empirical analysis, Woods *et al.* (1989) found a link suggesting that the decline in fertility in the 1870s would have had a positive influence on the reduction of infant mortality, but that of women's education was a more significant independent variable (Woods *et al.* 1989 pp126-127)

Evidence of a decline in fertility was the fall in the number of illegitimate births, the infant most at risk with a death rate twice that of legitimate births. Nationally, the rate fell to

55.6 between 1876-1908 with the decline accelerating after 1900 (using 1876 and 100 as the peak birthrate among women of childbearing age in England & Wales) By comparison the birthrate for legitimate children fell to 73.4 in the same period (Smith 1979 p119) Completed family size fell in every social class, with the fastest reduction in Class I and the slowest in Class VII (miners). One possible explanation has been the availability of better contraception (Smith 1989 p119). The numbers of males and females under 24 years and married also fell sharply between 1901 and 1911, with the result that many women did not marry and start having children until they were older than the previous generation. Whatever the reasons behind the fertility decline, it could be argued that by limiting their families, the family income went further and women would produce healthier babies if they completed their families earlier.

There were many risks associated with childbearing including the effects of the heavy nature of women's work at that time, including domestic tasks such as scrubbing and hauling water and coal. Case fatality for puerperal fever was high and maternal mortality remained at about 4 per 1000 live births well into the twentieth century and the use of sulphonamide drugs. (Winter 1982 p104). Most births in the latter half of the nineteenth century were attended by a 'midwife' but this term was used freely to describe anyone who was present, regardless of training or experience. The passing of The Midwives Act 1902 was important, therefore, because for the first time midwives were properly trained and regulated by their local authority. This could not, however, have influenced the decline in infant mortality which came prior to its introduction in the early 1900s. But, in conjunction with other factors, it may have contributed to the rapid fall in IMR that has taken place during the twentieth century.

In Bath, the birth-rate fell between 1881-1901, following the national trend but at a lower level. In 1881 there were 1,250 legitimate births, by 1891 there were 1,100 and by 1901 only 940. The MOH Report for Bath 1907 contains further information regarding the numbers of married women by age and the percentage of births attended by midwives (Appendix 3.1.). The numbers of married women between the ages of 15 and 35 fell from 1881-1901, whilst the number between the ages of 35-45 rose slightly. The overall numbers of married women between 15 and 45 years fell from 4,852 to 4,723, which may have been as the result of the imbalance in the female/male ratio in the city. This could also have caused the relatively high rate of illegitimate births in Bath, which in 1899 was 54 per 1000 births , compared with the average rate for England in 1898 of 42 per 1,000 births. The MOH, Dr Symons, reported in 1900 that the birth-rate for Bath was lower than for any year on record at 18.2 per 1,000 compared with England at 28.9. By 1904 the rate had increased slightly to 20.76 (England = 27.90) but fell again by 1908 to 19.5 (England = 26.5) Although the overall birth-rate for Bath declined towards the end of the nineteenth century, the actual numbers of births varied within the different city districts. Whilst the number of births fell in Walcot, they remained fairly constant in Lyncombe (Appendix 1.f.). The number of births in the Dolemeads fluctuated between 1872 and 1906 but was considerably lower in 1911, at about half the number in 1872. (Appendix 2.f.). It is possible that the fall in the number of births in Walcot was as a result of family limitation, this district included the area called Lansdown, and was a very fashionable location with inhabitants in Class 1. If , as has been postulated, fertility decline began among better-off families, this would be the most obvious location. It could be argued that there was not a corresponding fall in Lyncombe , because the residents were largely middle-class or the better-off working classes. Further investigation would be needed to explore this possibility.

Equally significant was the variation in mortality between legitimate and illegitimate children. In the MOH Report for Bath 1909, a rise in the number of illegitimate births was reported but the IMR for illegitimate births had fallen to 110 per 1,000. This compares with the IMR for legitimate births at 82 per 1000 legitimate births. The improvement was credited to the lady Health Visitor but this has to be treated with caution. From the information in the Birth Notification Register 1912-1917, the proportion of mothers with illegitimate children who were breast feeding was just over 30%. The influence of the Health Visitor may not have proved as great a factor in the reduction of mortality as the MOH would have liked to think.

The sub-district of Lyncombe included the Bath Union Workhouse, located at Frome Road, Odd Down, approximately 1.5 miles south of the city centre. Babies born there were also entered in the Vaccination Registers for Lyncombe, so it has been possible to collate some information about the numbers of legitimate and illegitimate births for selected years (Appendix 2.k.). The IMR for legitimate births was 88 in comparison with an IMR for illegitimate of 194. In the years 1900-1906 the number of illegitimate births exceeded legitimate births in each of the selected years (Appendix 2.j.). A total of 147 births were recorded, of which a 22.4% (33) were legitimate and 77.6% (114) were illegitimate. Of the 41 children who had died prior to Vaccination, 20 were legitimate and 21 illegitimate. From this it would appear that the survival rate for illegitimate children was actually higher than for legitimate children. It is difficult to draw conclusions, however, when little is known about the individual circumstances of the women who gave birth in the workhouse. Married women might have included those in poverty or deserted by their husbands. Equally, not all of the unmarried women may have entered or be sent there because of poverty. Watterson (1988) concluded that any rise in income would have had little affect on infant mortality for the poorest paid classes. Initially, it appears that between 1900 and

1906 the percentage of illegitimate babies who were born in the workhouse and died before vaccination (23%), was actually lower than in the Dolemeads (27%), indicating that illegitimacy alone, would not account for levels of infant mortality. It is very important to remember, however, that the statistics for the workhouse in the Vaccination Registers are incomplete, because in many cases there is no record or either death or vaccination, merely the words 'left' or 'not found'. In the Registers for the years 1900-1906 there are 28 entries with no details recorded. This is presumably because many of the single mothers had moved out of the district looking for accommodation and/or work. Taking this into account, together with the small sample of births and deaths, it is difficult to draw any firm conclusions about the relationship between illegitimacy and infant mortality in Bath. This is a subject that requires further research.

The Midwives Act in Bath was administered by a sub-committee of the Sanitary Committee, which met 9 times a year. In 1907 there were 26 midwives recorded as practising in the city, 8 having qualified by examination. (MOH Report for Bath 1907) Any midwife not carrying out her duties correctly faced disciplinary procedures and was called before the sub-committee. In the same MOH Report the percentage of births attended by midwives for 1905-1907 shows that they were present at between 53% and 65% of confinements. No records are shown for the numbers attended by doctors, so it is difficult to assess the impact of better ante-natal and post-natal care. As the professionalisation of midwifery did not take place until the first decade of the twentieth century, it could not have made a contribution to the reduction of infant mortality in Bath before that time. It is possible, however, that it did contribute to the rapid decline that has occurred during the twentieth century. One area of further investigation would be to examine the incidence of prematurity and the survival rate of twins, in order to discover whether improvements had taken place. Between 1901-1910 the second most frequent cause of infant death after atrophy and

debility was prematurity (MOH Report for Bath 1910). Whilst acknowledging that there had been a reduction in infant mortality,largely as a result of new sanitary measures, the MOH, Dr Symons, concluded that new methods must be adopted if further improvements were to be made, because the causes were principally ante-natal.

Conclusion

After having studied the pattern of infant mortality in Bath for the period 1871-1911, some interesting points have emerged. Firstly, the overall infant mortality rates for the city followed the same trends as the rates for England & Wales but at a consistently lower level. The pattern of infant mortality decline, however, was not uniform within the three city districts; the rates for Walcot, the biggest district, followed closest to the national trend with a fall in the 1880s, which was reversed in the 1890s, before falling again in the 1900s. In the smallest district, Bathwick, the rate peaked sharply in the 1870s and 1880s, fell in the following decade, with the exception of 1894, when it exceeded the rate for the previous twenty years, but fell again from 1898 onwards. In the district of Lyncombe, however, a different pattern emerged. A comparison with the national rate shows close similarities between 1871 and 1886, although Lyncombe recorded higher than average rates in 1878, 1883 and 1885. From 1886, however the two rates began to diverge, with the gap widening further after 1896. The underlying rate, illustrated by the calculation of the five year moving average, shows that infant mortality was falling throughout the period. Lyncombe, therefore, was untypical in its pattern of infant mortality decline, when compared with the average across the country and even within Bath itself.

The variations that existed within districts means that no one single factor can be identified as having had the greatest impact on the reduction of infant deaths in Bath between 1871-1911. Instead it is highly probable that improvements in the infant survival rates resulted from a complex interplay of several variables, with each having a different weighting at different locations within the city. In Lyncombe & Widcombe, the most notable change that took place was the migration of the population away from the crowded central areas to the

newly constructed suburbs, such as Oldfield Park. The overall rise in the standard of living that took place during the nineteenth century, could have been significant, because it enabled families to move to better houses, where there was single occupancy and no overcrowding. The poorest people still remained in the overcrowded, badly lit and badly ventilated properties near the river. In the Dolemeads, the pioneering council housing scheme did go some way to improving the standard of housing there, especially by raising the site above flood level. This programme of slum clearance ocurred at the same time as a reduction in infant mortality, which could prove that there was a positive correlation between the two. It is equally possible, however, that this was merely a coincidence, and that the construction of the new terraces was on too small a scale to have made a difference. The eyewitness account of Louie Stride over a decade later, illustrates that life in this area remained extremely difficult for some residents well into the twentieth century.

During the nineteenth century defective sanitation was frequently cited as a major cause of infant mortality. Initially, Bath, like many other towns and cities, failed to meet the demands of a growing population, with insufficient water supplies and provision for the removal of sewage. Many poorer households were forced to use unreliable and contaminated supplies for street pumps or even the river. The River Avon itself posed an additional threat with the ever-present risk of flooding in low-lying areas. Despite these problems the level of zymotic mortality was lower by comparison with larger cities. Improvements to water supplies probably had a positive affect on the health of older children and adults, which, in turn, would have lessened the prevalence of certain water-bourne diseases. But, this would not have accounted for the reduction in infant deaths in Bath because the greatest number occurred during the winter quarter and were attributed to airborne infections such as bronchitis and pneumonia.

Due to the absence of large-scale industries in Bath, employment opportunities for married women were limited to occupations such as laundress and dressmaker, which could be carried out within the home. Although, nationally, a correlation has been established between the levels of infant mortality and the incidence of working mothers, in reality their financial contribution to household income could be crucial. In Bath, the seasonality and unreliability of some male occupation such as quarrying, meant that their wives had little choice as to whether they worked or not. Infant diarrhoeal mortality was low in Bath compared with large industrial centres. The rise in the overall IMR in 1898 and 1899 was due to an increase in deaths from diarrhoeal infections and further investigation revealed the improper feeding methods being used by mothers. The improvements relating to the production of uncontaminated milk and the education of mothers regarding infant feeding, probably did have a beneficial effect on reducing levels of infant mortality, for example, the Medical Officer of Health for Bath reported the success of the campaign to promote breast feeding. The introduction of Health Visitors, however, came during the first decade of the twentieth century, which may have contributed to the rapid decline after 1900, but not for the falls in the previous thirty years.

A rise in the standard of living may also have led to an improvement in both the quantity and the quality of nutrition, which would have increased the chances of women having healthier children and increased general resistance to diseases. In Bath, the decline in low-paid and casual employment, together with an increase regular employment may be taken as evidence of an improvement in the overall wage levels. In Lyncombe and Widcombe, the majority of working men were either in semi-skilled or unskilled occupations. When infant mortality levels in Bath were declining at the beginning of the twentieth century, a large number of births in the Dolemeads were still registered to fathers who were labourers, particularly mason's labourers. It does appear that more of these children now survived

infancy, despite the fact that these men were in low-paid work, which could indicate that a positive correlation existed. Equally significant was the fall in IMR for illegitimate children during the same period, despite a rise in the number of illegitimate births. Although the mortality rate was still higher than that for legitimate children, it does indicate that the rates were sensitive to changes within some of the same factors as legitimate births.

At the end of the last century there was a reduction in the birth-rate. As a result, the family income went further and women produced healthier babies if they completed their families earlier. The birth-rate in Bath also fell during the 1890s and 1900s, however the rates varied within different districts. The population of Walcot fell by 20% during this period which may account for the decline in the number of births. In contrast, the population of Lyncombe rose by 59% but the number of births remained fairly constant. In the Dolemeads the numbers fluctuated between 1871 and 1906 but fell significantly in 1911. This could possibly be attributed to the movement of the population from one location to another within the district and changing age profiles of the inhabitants rather than family limitation. The contribution made by the improvements in ante-natal care, as a result of the Midwives Act 1902, is difficult to assess. By 1907, midwives attended 65% of the confinements in the city but the levels of training they had received is unknown.

In conclusion, it would appear that two factors made a significant contribution to the decline in infant mortality in Lyncombe & Widcome between 1871-1911. Firstly, a series of improvements in living conditions, including the migration of the population away from the low-lying, overcrowded central area and the provision of new Council-funded housing. In addition, the introduction of new and improved healthcare programmes aimed at nursing mothers, would account for the increase in the rate of decline that took place after 1900.

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APPENDIX 1. INFANT MORTALITY

1.a. Table: Quarterly and annual births under 1 year and mortality rate 1871-1910

1.b. Graph: Deaths under 1 year per 1,000 live births, Bath, Somerset 1871-1911

1.c. Graph: Deaths under 1 year per 1,000 live births, Walcot, Bath 1871-1911

1.d. Graph: Deaths under 1 year per 1,000 live births, Bathwick, Bath 1871-1911

1.e. Table: IMR for Different Locations indexed using 1900=100

1.f. Table: Comparison of births, infant deaths, and IMR for Walcot, Lyncombe and Batheaston, Bath 1871-1910

1.g. Graph: Deaths under I year per 1,000 live births, Lyncombe, Bath 1871-1911

1.h. Chart: Comparison of average third quarter and non-third quarter IMR in selected Registration Districts

1.i. Table: Births and deaths under 1 year per quarter; the IMR and actual deaths as a percentage of expected deaths per quarter, Lyncombe, Bath 1871-1910

1.j. Chart: Lyncombe deaths under 1 year per quarter as a percentage of annual deaths under 1 year 1871-1911

1.k. Graph: Infant mortality rates by father's occupation (Watterson 1988) (Haines 1995)

1l. Chart: Distribution of vaccinations or exemptions by age in Lyncombe, Bath 1871, 1892, 1911

Quarterly and annual births together with deaths under age 1 and the infant mortality rate for England in the years 1871-1910 1

YEAR		QUARTERLY BIRTHS	QUARTERLY INFANT DEATHS	ANNUAL BIRTHS	ANNUAL INFANT DEATHS	INFANT MORTALITY RATE
	First	197053	29511			
1871	Second	187793	25110			
	Third	192986	37367			
	Fourth	193493	32535	771325	124523	161
	First	208737	31123			
1872	Second	208711	27351			
	Third	201105	36615			
	Fourth	206093	28169	824646	123258	149
	First	216367	30903			
1873	Second	206618	27256			
	Third	203609	35252			
	Fourth	205215	30400	831809	123811	149
	First	214437	31295			
1874	Second	217605	28294			
	Third	209898	36500			
	Fourth	212367	32641	854307	128730	151
	First	215251	36019			
1875	Second	214650	29839			
	Third	210781	37118			
	Fourth	209505	31318	850187	134294	158
	First	229980	33516			
1876	Second	225866	28679			
	Third	216167	37289			
	Fourth	215451	30053	887464	129537	146
	First	230036	31749			
1877	Second	223220	29541			
	Third	213190	29376			
	Fourth	212556	29945	879002	120611	137
	First	221567	33067			
1878	Second	228702	29536			
	Third	222004	41002			
	Fourth	219145	32446	891418	136051	153
	First	226669	34180			
1879	Second	221011	28853			
	Third	218170	25119			
	Fourth	217016	31656	882866	119808	136
	First	221695	33672			
1880	Second	224293	28499			
	Third	218766	42765			
	Fourth	207643	29865	872397	134801	155

SOURCE: Derived from the Registrar General's Quarterly Returns of Births and Infant Deaths 1871-1911

	First	225778	30206			
1881	Second	225467	27211			
	Third	215586	29765			
	Fourth	216677	27918	883508	115100	130
	First	223802	32600			
1882	Second	227429	28135			
	Third	220118	32952			
	Fourth	217591	31460	888940	125147	141
	First	232086	32610			
1883	Second	228703	28802			
	Third	214144	30331			
	Fourth	214882	30560	889815	122303	137
	First	224694	30143			
1884	Second	231149	28001			
	Third	225454	43143			
	Fourth	227277	32290	908574	133577	147
	First	232015	33352			
1885	Second	222280	29467			
	Third	218204	30726			
	Fourth	221195	29772	893694	123317	138
	First	230671	34495			
1886	Second	230924	28330			
	Third	224029	40254			
	Fourth	217592	32005	903216	135084	150
	First	219515	31364			
1887	Second	226371	28522			
	Third	222382	38983			
	Fourth	217749	29567	886017	128436	145
	First	223838	32692			
1888	Second	224077	27202			
	Third	214665	28977			
	Fourth	216683	31256	879263	120127	137
	First	220936	31563			
1889	Second	227581	28985			
	Third	219805	36500			
	Fourth	216838	30438	885160	127486	144
	First	226327	33474			
1890	Second	226010	27690			
	Third	220304	35348			
	Fourth	205706	35023	878347	131535	150
	First	229953	33580			
1891	Second	238825	34576			
	Third	224089	32664			

SOURCE: Derived from the Registrar General's Quarterly Returns of Births and Infant Deaths, 1871-1911

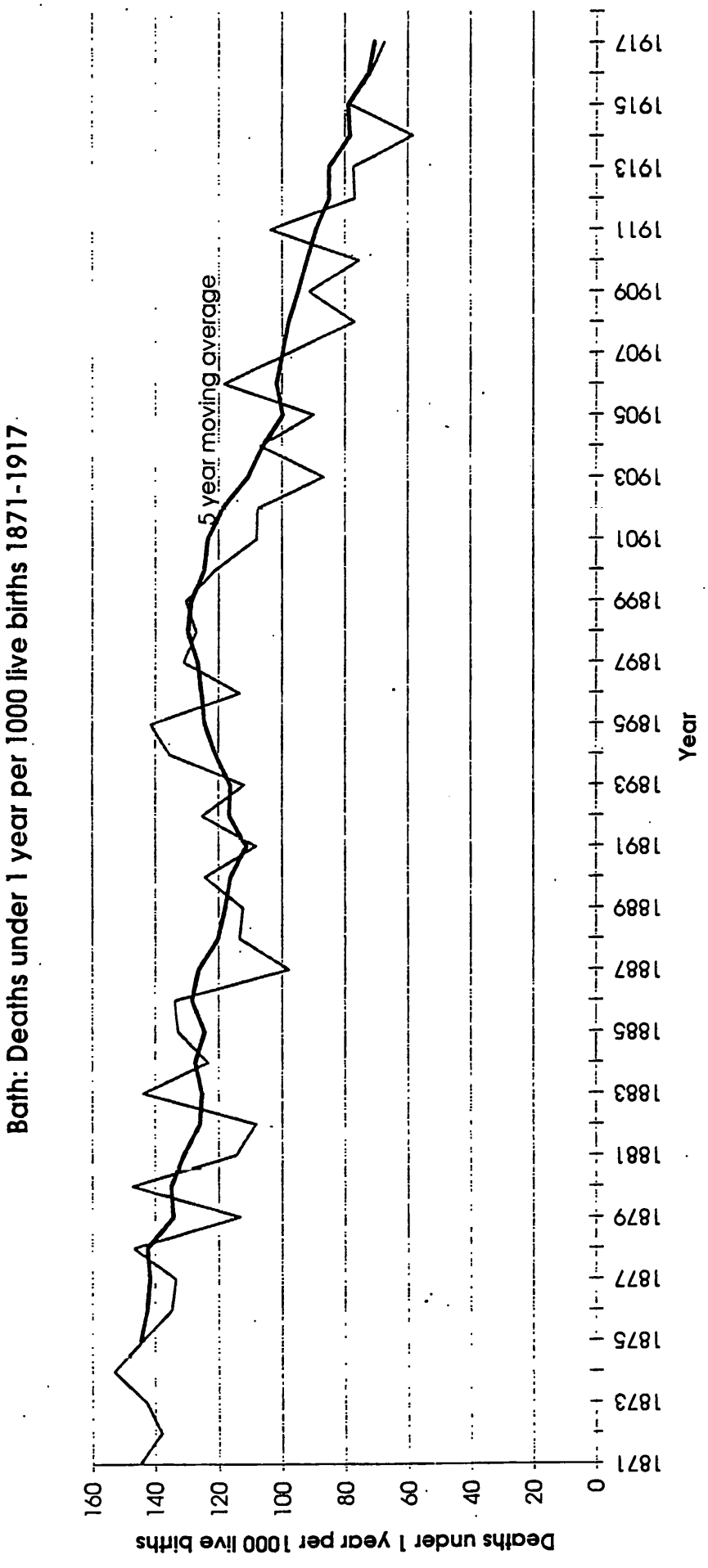
Quarterly and annual births together with deaths under age 1 and the infant mortality rate for England in the years 1871-1910

	Fourth	220969	35178	913836	135998	149
	First	219851	37252			
1892	Second	232385	30100			
	Third	228254	34309			
	Fourth	216780	30942	897270	132603	148
	First	231289	31790			
1893	Second	235109	31660			
	Third	229147	48926			
	Fourth	218637	32921	914182	145297	159
	First	228808	34499			
1894	Second	220861	26694			
	Third	215865	28843			
	Fourth	223705	31882	889239	121918	137
	First	240455	36576			
1895	Second	233207	30114			
	Third	231724	46670			
	Fourth	216474	34945	921860	148305	161
	First	222582	31801			
1896	Second	231213	28731			
	Third	227845	40639			
	Fourth	235561	34316	917201	135487	148
	First	235711	33345			
1897	Second	226345	28133			
	Third	233090	49679			
	Fourth	225958	32657	921104	143814	156
	First	232145	32751			
1898	Second	232343	28500			
	Third	234665	52837			
	Fourth	223720	34161	922873	148249	161
	First	231511	31748			
1899	Second	239295	27808			
	Third	231593	58958			
	Fourth	226241	32704	928640	151218	163
	First	239988	35635			
1900	Second	234523	30644			
	Third	232578	43673			
	Fourth	219065	32991	926154	142943	154
	First	231904	31781			
1901	Second	233518	27496			
	Third	234932	48926			
	Fourth	228916	32508	929270	140711	151
	First	216967	29727			

SOURCE: Derived from the Registrar General's Quarterly Returns of Births and Infant Deaths, 1871-1911

1902	Second	220252	26316			
	Third	224005	28149			
	Fourth	216176	32446	877400	116638	133
	First	218548	28332			
1903	Second	224894	24619			
	Third	224202	30126			
	Fourth	214275	32899	881919	115976	132
	First	223346	31274			
1904	Second	221777	24992			
	Third	220505	42415			
	Fourth	212156	28857	877784	127538	145
	First	221266	28442			
1905	Second	219505	23072			
	Third	217916	33897			
	Fourth	203870	24405	862557	109816	127
	First	220422	27340			
1906	Second	220446	22308			
	Third	217669	38846			
	Fourth	209383	26279	867920	114773	132
	First	219001	28489			
1907	Second	221469	22936			
	Third	213371	21169			
	Fourth	203130	27384	856971	99978	117
	First	222974	26840			
1908	Second	219789	21490			
	Third	219526	27502			
	Fourth	204996	28336	867285	104168	120
	First	211989	25703			
1909	Second	219094	20827			
	Third	211121	21498			
	Fourth	202149	23590	844353	91618	109
	First	204748	23029			
1910	Second	216721	19507			
	Third	209797	20461			
	Fourth	196973	23735	828239	86732	105

SOURCE: Derived from the Registrar General's Quarterly Returns of Births and Infant Deaths, 1871-1911


Bath: Deaths under 1 year per 1000 live births 1871-1917
5 year moving average
Deaths under 1 year per 1000 live births
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20
40
60
80
100
120
140
160
Year
1871
1873
1875
1877
1879
1881
1883
1885
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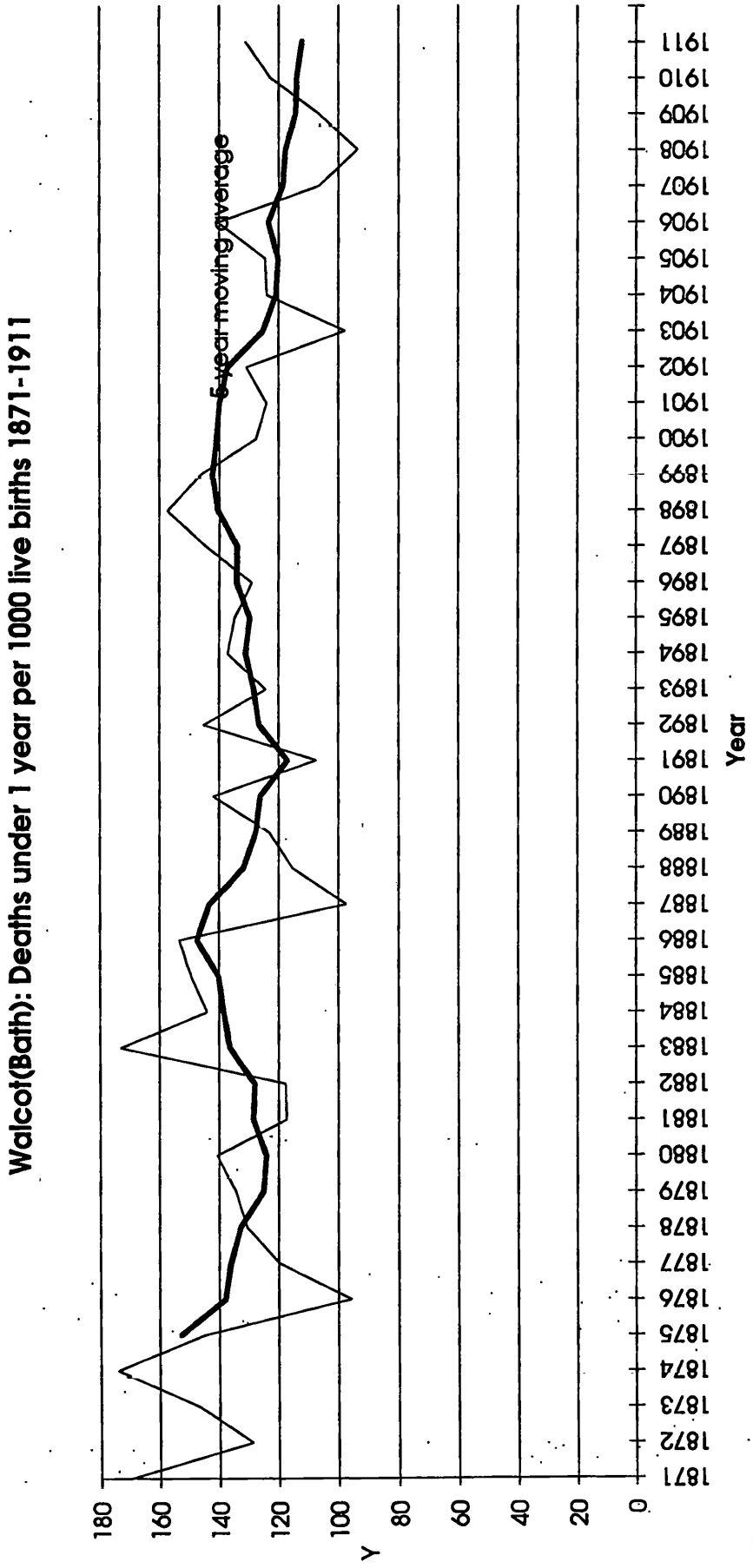
Walcot(Bath): Deaths under 1 year per 1000 live births 1871-1911
5-year moving average
Y
Year
180
160
140
120
100
80
60
40
20
0
1871
1872
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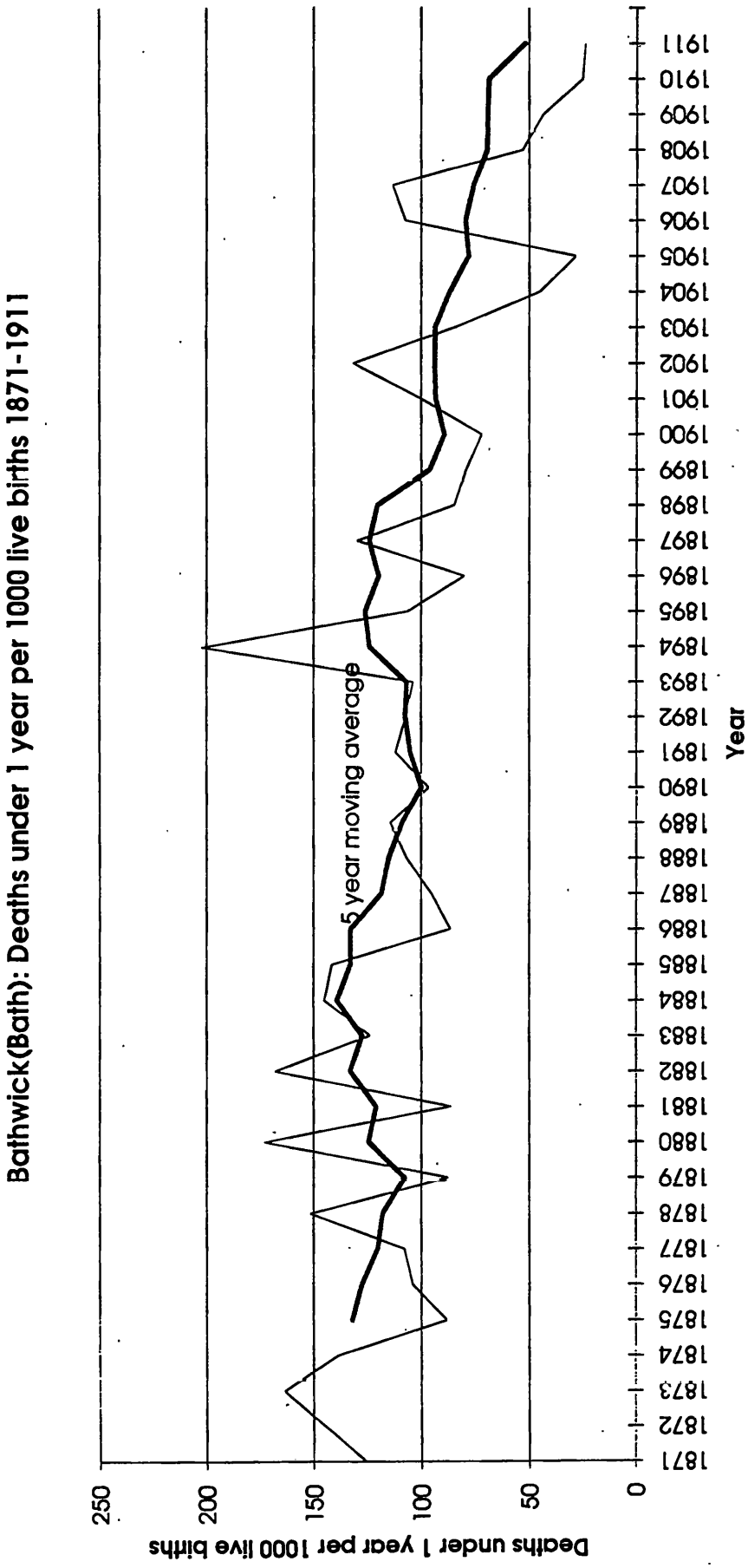
1911


Bathwick(Bath): Deaths under 1 year per 1000 live births 1871-1911
Deaths under 1 year per 1000 live births
250
200
150
100
50
0
5 year moving average
Year
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1910
1911

Table Showing the IMR for Different Locations Indexed Using 1900=100

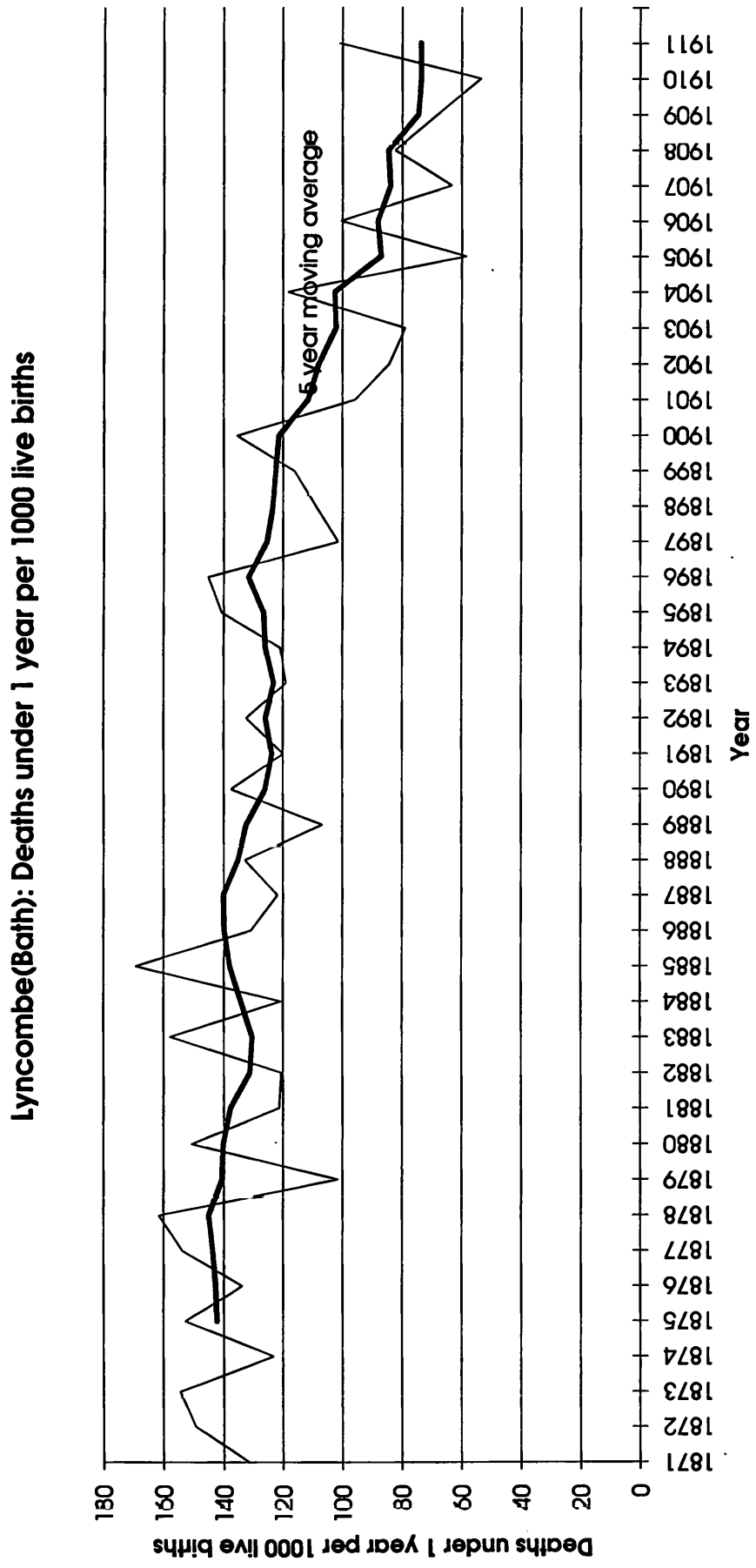
Year	England and Wales %	Lyncombe %	Walcot %
1871	104.5	97	132.8
1872	96.7	110.3	100.7
1873	96.7	114	114.8
1874	98	91.1	135.9
1875	102.5	113.3	113.2
1876	94.8	99.2	75
1877	88.9	114	93.7
1878	99.3	120	102.3
1879	88.3	74.8	105.4
1880	100.6	111.8	110.1
1881	84.4	89.6	91.4
1882	91.5	89.6	92.1
1883	88.9	117	135.1
1884	95.4	89.6	112.5
1885	89.6	126.9	116.4
1886	97.4	97	119.5
1887	94.1	90.3	75.7
1888	88.9	98.5	89.8
1889	93.5	79.2	96
1890	97.4	102.2	110.9
1891	96.7	88.8	83.5
1892	96.1	97.7	113.2
1893	103.2	88.1	96.8
1894	88.9	89.6	107
1895	104.5	104.4	105.4
1896	96.1	107.4	100.7
1897	101.2	75.5	112.5
1898	104.5	80.7	122.6
1899	105.8	85.9	114
1900	100	100	100
1901	98	71.1	96.8
1902	86.3	62.2	102.3
1903	85.7	58.5	76.5
1904	94.1	87.4	96.8
1905	82.4	42.9	97.6
1906	85.7	74.8	109.3
1907	75.9	46.6	82.8
1908	77.9	60.7	73.4
1909	70.7	50.3	83.5
1910	68.1	39.2	96

Source: Registrar General's Quarterly Returns

Numbers of births, deaths and infant mortality rates in the sub-districts of Walcot, Lyncombe and Batheaston, Bath 1871-1910

	No. of Births	No.of Deaths	IMR
Walcot			
1871-1880	8626	1320	153
1881-1890	7549	926	123
1891-1900	6560	886	135
1901-1910	5496	644	117
Lyncombe & Widcombe			
1871-1880	3786	535	141
1881-1890	3876	511	132
1891-1900	3540	439	124
1901-1910	3630	293	80
Batheaston			
1871-1880	1953	227	116
1881-1890	2056	204	99
1891-1900	2207	265	120
1891-1910	2011	178	89

Source: Registrar General's Quarterly Returns 1871-1910)


Lyncombe(Bath): Deaths under 1 year per 1000 live births
5 year moving average
Deaths under 1 year per 1000 live births
180
160
140
120
100
80
60
40
20
0
Year
1871
1872
1873
1874
1875
1876
1877
1878
1879
1880
1881
1882
1883
1884
1885
1886
1887
1888
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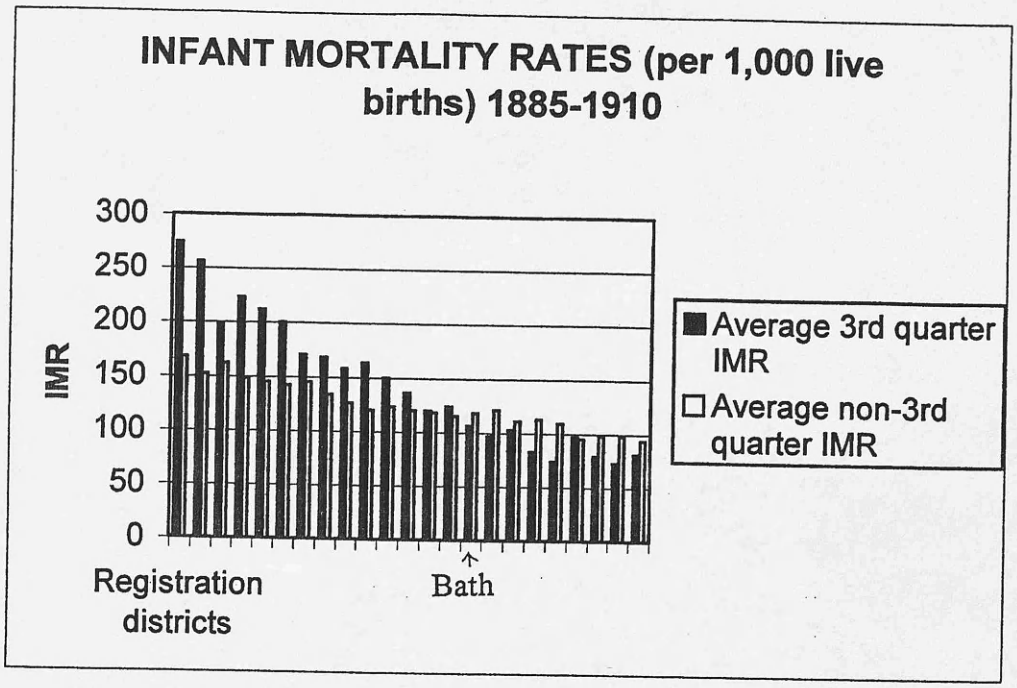
1906
1907
1908
1909
1910
1911



Infant mortality rates (per 1,000 live births), 1885–1910

'Registration city' or Registration District	(1) Average annual IMR	(2) Average 3rd quarter IMR	(3) Average non-3rd quarter IMR	(4) Ratio (2)/(3)*100
Preston	195	274	168	163
Leicester	178	256	152	168
Blackburn	171	199	162	123
Norwich	166	223	148	150
Newcastle	161	212	145	146
Tynemouth	157	200	142	141
Exter	151	170	145	117
Loughborough	142	168	134	126
Castle Ward	134	158	126	126
Cambridge	131	163	120	136
Blaby	130	150	123	121
Hexham	124	136	120	113
Newton Abbot	119	120	118	101
Biggleswade	118	124	115	108
Bath	115	106	118	90
Clitheroe	115	97	121	80
St. Thomas	109	103	111	93
Banbury	105	83	113	74
Henstead	101	74	109	67
Chesterton	96	97	95	101
Crediton	93	79	98	80
Garstang	92	73	98	74
Braintree	91	81	94	86

Source: Williams & Galley (1995)

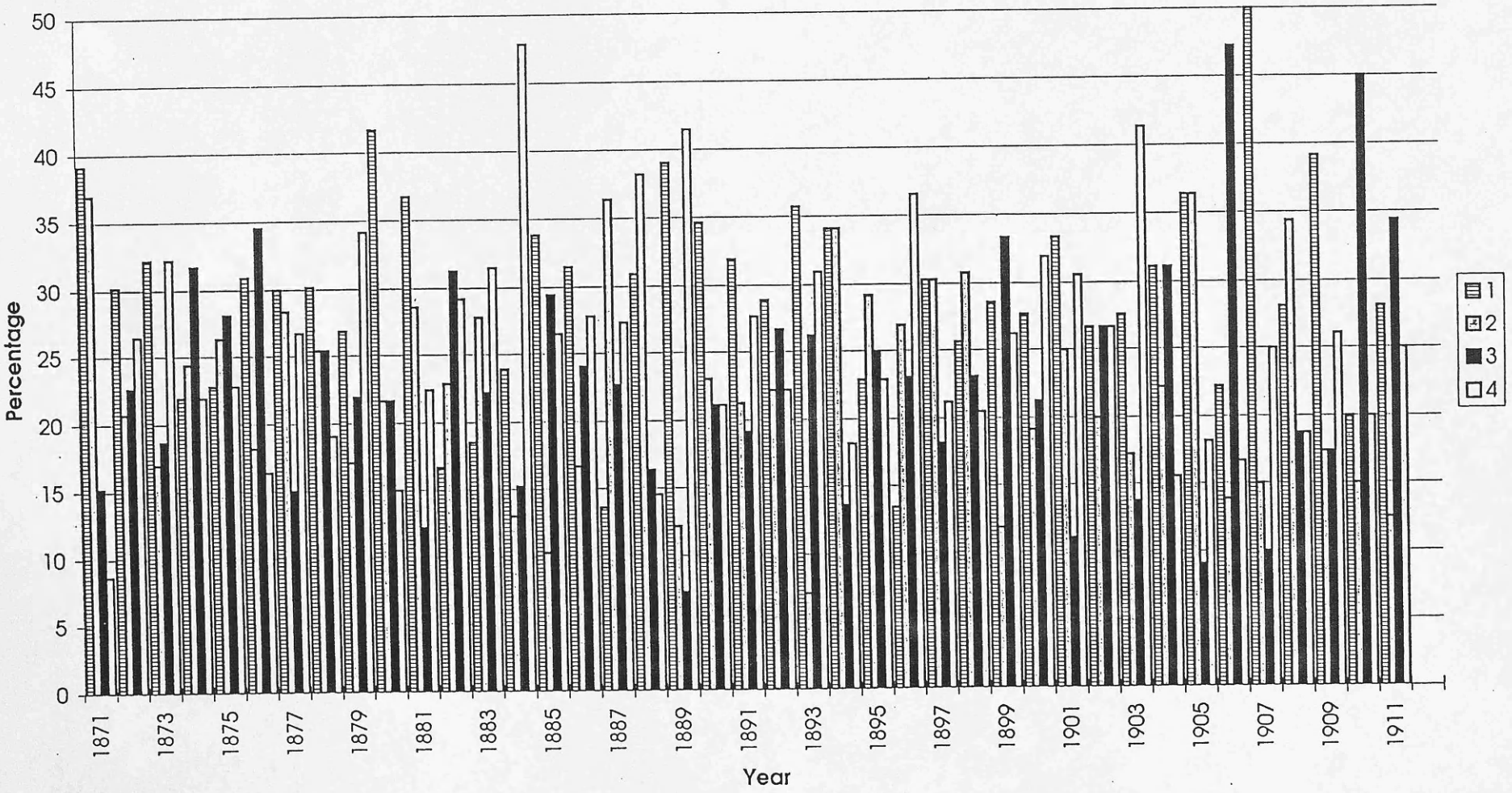
Births and deaths under 1 year per quarter; the IMR and actual deaths as a percentage of expected deaths per quarter in Lyncombe (Bath) 1871-1910

					Total					Total		IMR					
	Q1	Q2	Q3	Q4	Births	Q1	Q2	Q3	Q4	Deaths				Q1	Q2	Q3	Q4
1871	83	99	77	91	350	18	17	7	4	46		131	11.5	157	148	61	35
1872	98	93	79	85	355	16	11	12	14	53		149	13.25	121	83	91	106
1873	88	85	96	113	382	19	10	11	19	59		154	14.75	129	68	75	129
1874	92	90	81	70	333	9	10	13	9	41		123	10.25	88	98	127	88
1875	87	99	104	83	373	13	15	16	13	57		153	14.25	91	105	112	91
1876	108	95	93	115	411	17	10	19	9	55		134	13.75	124	73	138	65
1877	93	104	94	99	390	18	17	9	16	60		154	15	120	113	60	107
1878	106	106	93	85	390	19	16	16	12	63		162	15.75	121	102	102	76
1879	120	81	95	108	404	11	7	9	14	41		101	10.25	107	68	88	137
1880	115	96	96	91	398	25	13	13	9	60		151	15	167	87	87	60
1881	97	114	100	93	404	18	14	6	11	49		121	12.25	147	114	49	90
1882	90	108	97	103	398	8	11	15	14	48		121	12	67	92	125	117
1883	80	88	78	96	342	10	15	12	17	54		158	13.5	74	111	89	126
1884	101	95	85	100	381	11	6	7	22	46		121	11.5	96	52	61	191
1885	90	117	102	92	401	23	7	20	18	68		170	17	135	41	118	106
1886	96	108	98	111	413	17	9	13	15	54		131	13.5	126	67	96	111
1887	88	103	85	85	361	6	16	10	12	44		122	11	55	145	91	109
1888	115	102	92	105	414	17	21	9	8	55		133	13.75	124	153	65	58
1889	97	93	91	103	384	16	5	3	17	41		107	10.25	156	49	29	166
1890	118	72	103	85	378	18	12	11	11	52		138	13	138	92	85	85
1891	107	102	103	80	392	15	10	9	13	47		120	11.75	128	85	77	111
1892	87	80	78	95	340	13	10	12	10	45		132	11.25	116	89	107	89
1893	91	92	90	80	353	15	3	11	13	42		119	10.5	143	29	105	124
1894	101	89	91	83	364	15	15	6	8	44		121	11	136	136	55	73
1895	96	88	82	75	341	11	14	12	11	48		141	12	92	117	100	92
1896	89	94	87	88	358	7	14	12	19	52		145	13	54	108	92	146
1897	85	83	86	71	325	10	10	6	7	33		102	8.25	121	121	73	85
1898	86	99	88	85	358	10	12	9	8	39		109	9.75	103	123	92	82
1899	104	93	87	78	362	12	5	14	11	42		116	10.5	114	48	133	105
1900	100	84	75	88	347	13	9	10	15	47		135	11.75	111	77	85	128
1901	90	103	85	98	376	12	9	4	11	36		96	9	133	100	44	122
1902	78	83	98	97	356	8	6	8	8	30		84	7.5	107	80	107	107
1903	76	103	97	91	367	8	5	4	12	29		79	7.25	110	69	55	166
1904	101	81	112	86	380	14	10	14	7	45		118	11.25	124	89	124	62
1905	102	89	96	90	377	8	8	2	4	22		58	5.5	145	145	36	73
1906	77	95	90	96	358	8	5	17	6	36		101	9	89	56	189	67
1907	80	81	79	76	316	10	3	2	5	20		63	5	200	60	40	100
1908	104	116	95	73	388	9	11	6	6	32		82	8	113	138	75	75
1909	64	91	96	87	338	9	4	4	6	23		68	5.75	157	70	70	104
1910	97	102	95	80	374	4	3	9	4	20		53	5	80	60	180	80

Source: Registrar General's Quarterly Returns

KEY: Q1. - Winter Q.2. - Spring Q.3. - Summer Q.4. - Autumn

Lyncombe(Bath): Deaths under 1 year per quarter as a percentage of annual deaths under 1 year
1871-1911

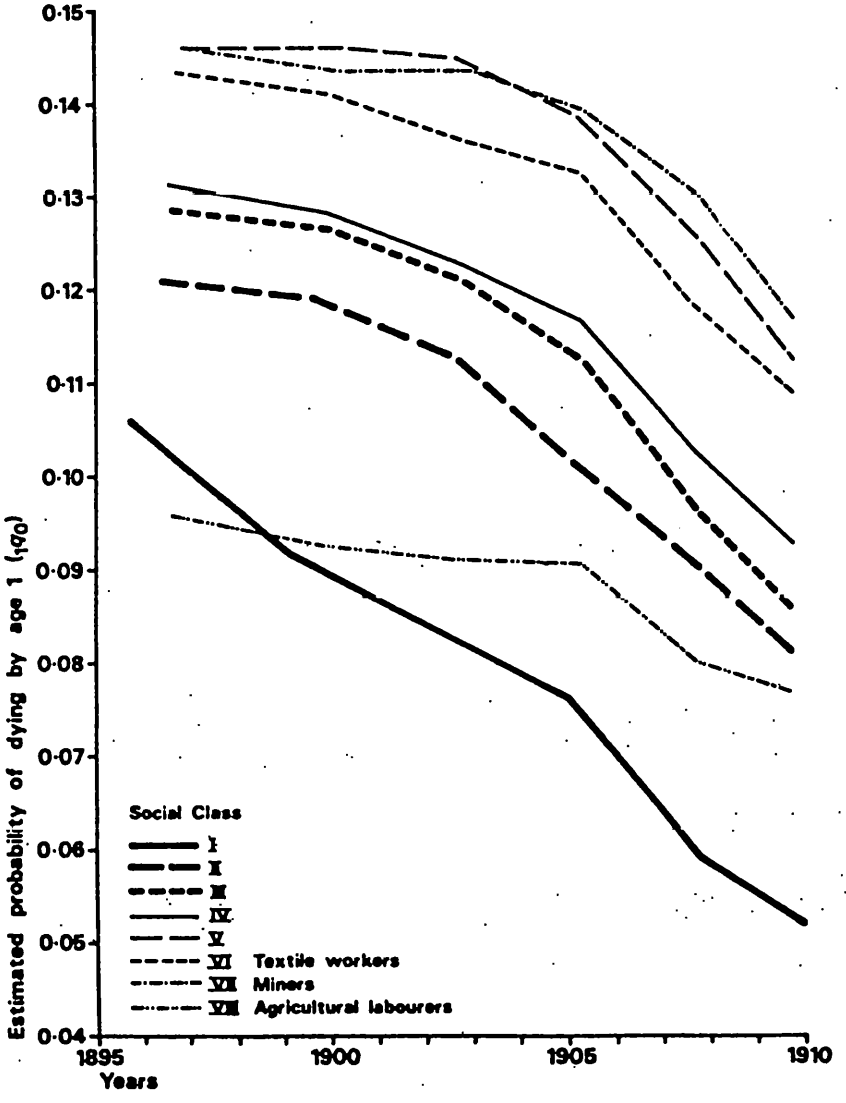


1.j.

Trend of infant-mortality rates by occupation and social class of father: legitimate births, England and Wales (per 1000 live births) **1.k**

	Infant mortality rate			
	1896	1899	1905	1911
Father's occupation				
A Professional workers	101.5	100.6	76.4	55.1
B Farmers	97.3	97.1	80.2	74.2
C Teachers	104.7	106.0	80.0	57.5
D Clerical workers	124.3	119.1	95.9	81.2
E Textile workers	168.2	172.1	149.5	148.1
F Miners	178.8	183.7	158.8	160.0
G Farm workers	115.5	116.9	101.4	95.9
H Building labourers	177.0	180.9	149.5	138.5
Father's social class				
I Professional	101.5	100.6	76.4	76.0
II Intermediate	124.9	127.0	105.3	106.0
III Skilled workers	153.0	155.5	129.7	113.0
IV Partly skilled workers	147.7	154.8	135.7	122.0
V Unskilled workers	171.0	177.3	152.9	153.0
All classes and occupations	148.2	152.6	129.7	124.9

Source: Haines (1995)



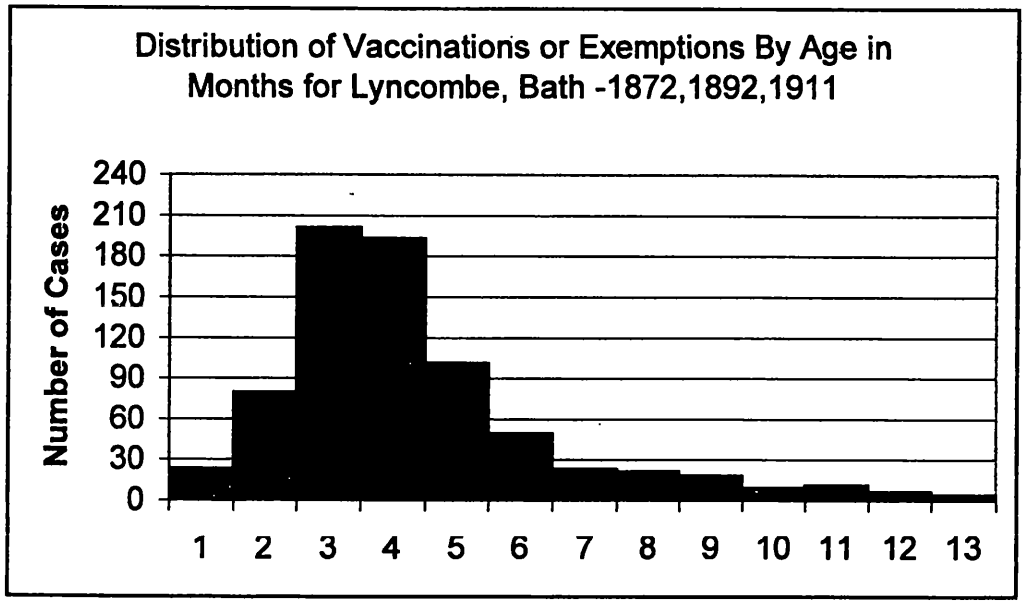
Infant Mortality by Father's Occupation (Social Class), England and Wales, 1895–1910

Source: Watterson (1988)

Chart showing ages of children at date of vaccination or exemption, Bath for the years 1872, 1892, 1911

Age in Months	1872	1892	1911
Up to 1	0	5	18
2-	15	15	49
3-	86	50	65
4-	94	39	60
5-	45	21	35
6-	24	12	13
7-	14	6	3
8-	9	11	1
9-	4	11	3
10-	5	2	2
11-	3	5	3
12-	2	2	2
13-	1	3	-
24-	1	-	1
38-	-	1	-

Source: Vaccination Registers for Lyncombe 1872, 1892, 1911



APPENDIX 2. SOURCES

2.a. List Of Medical Officer Of Health Reports in the Bath & N.E. Somerset Archives

2.b. List of Vaccination Registers and Report Books in the Bath & N.E.Somerset Archives

2.c. Page From the Birth Notification Register for Bath 1912-1917

2.d. Statistics From A Special Report On The Average Mortality In Bath Especially For 1877 and The Winter Quarter 1878

2.e Advice on Infant Feeding From The MOH Reports For Bath

2.f. Table: Statistics compiled from the Vaccination Registers for Lyncombe 1872, 1892, 1911

2.g. Table: Statistics compiled from the Vaccination Registers for the Dolemeads and the Bath Workhouse 1900-1906

2.h. Statistics compiled from the Vaccination Registers for Bathwick, Bath 1872, 1892

2.i. Handwritten Report by the MOH for Bath – Winter Quarter 1872

2.j. Numbers of legitimate and illegitimate births and deaths in Lyncombe 1872, 1892 1911

Medical Officer of Health Reports in the Bath & N.E.Somerset Archives

Acc 158

Deposited by Bath District Health Authority, Community Health Office, per Mrs Read, secretary to Dr Meadows on 2nd January 1986

1888-1903 Annual reports of M.O.H. to Bath Urban Sanitary Authority (printed; bound vol.
inc "Report on the Sanitary State of the Bath Union, with the annual mortality for the last 5 years" 1864.

1888-1900 Annual reports of M.O.H. to Bath Urban Sanitary Authority (printed; bound vol.

1901-1908 " " " " " " " " " " " " " "

1909-1915 " " " " " " " " " " " " " "
inc "Sewage Disposal Scheme: historical notes and programme of opening," 1914.
Annual reports of School Medical Officer 1908-1914
" " " Infant Consultation and Baby Visiting Association 1914-1915.

1897-1900 Annual reports of M.O.H. to Bath Urban Sanitary Authority (printed; bound vol.)
inc M.O.H. report on Housing of the Working Classes, 1901

1901-1907 Annual reports of M.O.H. to Bath Urban Sanitary Authority (printed; bound vol

1908-1913 " " " " " " " " " " " " " "
inc Meteorological notes for 1906
Annual reports of School Medical Officer 1908-1909

1901-1906 Annual reports of M.O.H. to Bath Urban Sanitary Authority (printed; bound vol

1914-1925 Annual reports of School Medical Officer to Bath Education Authority (printed; bound vol

1919-1925 Annual reports of M.O.H. and Chief Inspector of Nuisances (" " "
inc Annual reports of Infant Consultation and Baby Visiting Association 1914-1925 [from 1918 re-named "Infant Welfare Association"]

1926-1930 Annual reports of M.O.H. and Chief Inspector of Nuisances; School Medical Officer; Infant Welfare Association (printed; bound vol.

1931-1935 " " " " " " " " " " " " "

BATH POOR LAW UNION
BATH BOARD OF GUARDIANS Cont

cont: VACCINATION OFFICERS' REPORT BOOKS (contain extracts from Registrar's return of births)

PL ref					
811	Nov 1871	-	Aug 1875	Abbey district	
812	Sep 1875	-	Jul 1879	" "	
813	Jul 1871	-	Jul 1875	Bathwick "	
814	Jul 1875	-	May 1878	" "	(in reverse)
815	Nov 1883	-	Nov 1888	" "	
816	Nov 1888	-	Nov 1893	" "	
817	Nov 1893	-	Dec 1898	" "	
818	Dec 1898	-	Nov 1901	" "	
819	Nov 1901	-	Nov 1904	" "	
820	Dec 1904	-	Nov 1909	" "	
821	Jan 1910	-	Jun 1914	" "	
822	Jul 1871	-	Jun 1875	Batheaston"	
823	Jul 1875	-	Nov 1883		
824	Dec 1883	-	Nov 1888	" " " "	
825	Nov 1888	-	Nov 1893	" "	
826	Nov 1893	-	Nov 1898	" "	
827	Nov 1898	-	Nov 1901	" "	
828	Nov 1901	-	Dec 1904	" "	
829	Nov 1904	-	Nov 1909	" "	
830	Nov 1909	-	Nov 1912	" "	
831	Dec 1912	-	May 1914	" "	
832	Jul 1871	-	Jul 1875	Lansdown "	
833	Jul 1875	-	May 1884	" "	
834	Jul 1871	-	Jul 1875	Lyncombe & Widcombe district	
835	Jul 1875	-	Nov 1883	" " "	(in reverse)
836	Nov 1883	-	Nov 1888	" " "	
837	Nov 1888	-	Dec 1893	" " "	
838	Nov 1893	-	Dec 1898	" "	
839	Nov 1898	-	Nov 1901	" "	
840	Nov 1901	-	Dec 1904	Lyncombe district	
841	Nov 1904	-	Nov 1909	" "	
842	Nov 1909	-	Nov 1912	" "	

Vaccination Registers

/843-

cont: VACCINATION OFFICERS' REPORT BOOKS (contain extracts from Registrar's return of births

PL ref						
843	Aug 1871	-	Jul 1875	Twerton district		
844	Jul 1875	-	Nov 1883	"	"	(in reverse)
845	Nov 1883	-	Dec 1888	"	"	
846	Oct 1888	-	Nov 1893			
847	Nov 1893	-	Nov 1898	"	"	
848	Nov 1898	-	Nov 1901	"	"	
849	Nov 1901	-	Nov 1904	"	"	
850	Nov 1904	-	Nov 1909	"	"	
851	Nov 1909	-	Nov 1912	"	"	Vaccination Register
852	Jul 1871	-	Jul 1875	Walcot	"	
853	Jul 1875	-	Nov 1883	"	"	
854	Nov 1883	-	Dec 1888	"	"	
855	Nov 1888	-	Nov 1893	"	"	
856	Nov 1893	-	Dec 1898	"	"	
857	Nov 1898	-	Dec 1901	"	"	at end of vol vaccination of children & juveniles
858	Nov 1901	-	Nov 1904	"	"	
859	Nov 1904	-	Nov 1909	"	"	
860	Nov 1909	-	Dec 1912	"	"	

VACCINATION OFFICERS' REPORT BOOKS (contain extracts from registers of births).

790	1871 - 1885	All districts.
791	1885 - 1889	" "
792	1889 - 1892	" "
793	1892 - 1894	" "
795	1898 - 1900	" "
796	1900 - 1901	" "
798	1901 - 1903	" "
799	1903 - 1905	" "
800	1905 - 1906	" "
802	1906 - 1907	" "
804	1908 - 1910	Batheaston registration district.
805	1908 - 1914	Bathwick " "
803	1908 - 1910	Lyncombe " "
806	1907 - 1915	Walcot " "
807	1908 - 1909	Twerton " "
808	1910 - 1913	Lyncombe " "
809	1910 - 1914	Batheaston " "
810	1913 - 1914	Batheaston " "

Born. 1912	Notified or Registered.	Name and Sex.		Parents' Rank.	Residence.
Aug. 25. 238.	239A.	Bush	M		6, Crandale Road
" 26. 239.	241A.	Brown	F		160, Coronation Aven.
" 27. 240	242A	Brown	M	Hunter	15, Denmark Rd.
" 27. 240	243A	Broom	~~F~~ M	Illeg:	1, Ferry Place, Twerto
" 29. 242.	243A	Butcher	F	Bricklayer	15, Waterloo Bdgs.
July 19. 201.	241R	Bean	F	Carter	62, Calton Rd.
Sep. 5. 249.	251A	Butcher	F	Labourer	40, Lansdown View, Twer.
" 13 257	260A	Bruce	M		66, Avon Street
" 14. 258.	260A	Bletso	F	Labourer	93, Cocksbrook Road
" ~~15. 259.~~	~~260A~~	~~Blanchard~~	~~M~~	do	~~12, Gloucester Bdgs.~~
" 20 264	267A	Brown	F	Publican	17, Old Orchard St
" 21. 265	267A	Burge	M	Mov. Cleaner	42, Brook Road
" 23. 267	269A	Bartlett	F	Tailor	4, Gays Hill
" 24. 268	269A	Bradfield	F	Printer	27, Mayfield Rd.
" 27. 271	272A	Bradford	M	Publican	14, Hampard's Bdgs
" 28. 272.	274A	Burgess	M	Illeg:	3, Princes St, Queen S,
" 27. 271.	274A	Bolwell	M		57, Third Avenue
Oct. 3. 277	278A	Besant	M	Carter	9, Worcester Bdgs
" 7. 281.	284A	Biss	F	Chauffeur	2, Clarence St. Marlsk
" 11. 285	288A	Brimble	F	Electrician	4, Canterbury Road
" 12. 286	288A	Bedford	M	Manager	Putteney Mews
" 13. 287	288A	Bateman	F		4, Evelyn Rd., Weston
" 20. 294	295A	Burford	M		8, Gordon Road
" 18. 292	295A	Buoys	F		Pennyquick
" 21. 295.	296A	Butcher	M		1, Highbury Bdgs.
" 23. 297.	298A	Bird	F	Gardener	17, Victoria Rd., Twerton
" 30. 304.	305A	Beyer	M		2, Down Hse., Up. B. Rd.
" 31. 305.	306A	Broad	M	Stoker	5, Elmgrove Terr, Twerto.
Nov. 2. 307	309A	Bishop	F		18, Junction Rd.
" 5. 310	312A	Bright	M		41, St. John's Rd, Weston
" 6. 311	312A	Burge	M	Illeg:	W.H. 7, Bellmead Cott.
" 9. 314	316A	Billenger Billinger	M		7, Margarets Bldgs
" 13. 318	319A	Bodman	F		4, Tanner's Bldgs
" 14. 319	320A	Bodeley	F	Policeman	193, Coronation Aven
" 14 319	320A	Bryant	M	Cabinet Maker	21, ~~Gladbrook~~ Coronation Aven
" 16 321	323A	Barnett	F.F.	Blacksmith	2, Dover Court, Kensingto
" 30. 335	337A	Bodman	M	Carter	36, Lorne Road
Dec. 1. 336	338A	Bees	M	Motorman	27, S. Kildas Rd.
" 8. 343	346A	Baker	M	Shop assistant	13, Walcot Parade
" 10. 345	346A	Bennett	F		95, Cocksbrook Rd.

Attendant.	Fed.	Died	Cause of Death.	Certified by	Number
Dr. Marsh					
Dr. Niven					
E. Lansdown	Breast.				
F. Kettleby		May 6/13	A. Gastro Enteritis	Dr. Niven 36	418
M. Price	"				
Dr. Almond					
F. Kettleby					
Dr. Jarvis					
E. M. Plinsoll	"				
E. Bryant	"	Rural			
M. Price	"				
E. Mullins	"				
A. Bryant	"				
E. Lansdown	"				
M. Edwards	"				
M. Edwards	"				
Dr. Heathcote					
M. Price	"				
Ham-Smith	"				
M. Brimble	"				
A. Harding	"				
Dr. Heathcote		Oct. 13/12	Premature Birth	Dr. Heathcote 5	696
Dr. Almond		Oct. 20/12	Atelectasis	Dr. Almond	714
Dr. Heathcote					
Dr. Jarvis					
E. J. Trew					
E. Bryant	"				
M. Edwards	"				
Dr. Heathcote					
Dr. Blogan					
F. J. Jackson		Nov. 10/12	Premature Bth; Convulsions	Dr. Craddock	785
Dr. Attridge		Nov. 9/12	Premature Birth	Dr. Attridge	767
Dr. Heathcote		Mar. 2/13	Congenital Lues	Dr. Niven 16	201
E. Sheppard	"				
M. A. Ingle	"				
Ham-Smith	1 died	Mar. 3/13	Broncho Pneumonia	Dr. Attridge 16	202
Ham-Smith	1 died	Dec. 14/12	Malnutrition; Marasmus	Dr. Melech 14	872
M. Edwards	"				
E. J. Trew					
Ham-Smith	"				
A. Harding	"				
M. J.					

Extracted from:-

SPECIAL REPORT ON THE AVERAGE RATE OF MORTALITY IN BATH ESPECIALLY FOR 1877 & WINTER QUARTER 1878

AS ORDERED BY

BATH URBAN SANITARY AUTHORITY

A. B. BRABAZON, M.D.

MEDICAL OFFICER OF HEALTH

TABLE I.

BATH.—MUNICIPAL BOROUGH.

1871.

Area in Acres.	Houses inhabited.	Uninhabited.	Building.	Population.
3539	8332	586	50	52,537

Proportion of Population to each acre.	Total number of Houses.	Proportion of Population to each house.
14·8	8968	5·8

1871.

PAROCHIAL DISTRICTS

Bathwick	houses 907	Population ... 5,271	Proportion to house	... 5·8
Lyncombe and Widcombe	houses 2047	Population ... 11,020	Ditto	... 5·3
St James	houses 700	Population ... 5,678	Ditto	... 8·0
St. Michael	houses 454	Population ... 2,679	Ditto	... 5·9
St. Peter & St. Paul	houses 340	Population ... 2,155	Ditto	... 6·3
Walcot	houses 4520	Population ... 25,754	Ditto	... 5·6

Density of Population and average mortality in Bath for three Decenniads from 1841 to 1870.

Acreage for each Person	... 0·44
Mean Mortality per 1,000	... 23

(Vide Supplement to 33th Annual Report of Registrar-General)

In the healthy Districts during 1861-70 there were 166 persons to a square mile, in all England 307.

2.d

TABLE II.

ZYMOTIC MORTALITY.

Quarter ending March 31st, 1878.

Per 1000 annually.

1.—IN 50 LARGE TOWN DISTRICTS-ZYMOTIC MORTALITY 3·2

Towns for Example.	Population estimated to Middle of 1878.				
Hastings.	Population—38,727—Zymotic Mortality			...	1·5
Southampton.	Ditto	51,727	Ditto	...	2·1
Reading.	Ditto	40,065	Ditto	...	5·0
Cheltenham.	Ditto	43,618	Ditto	...	7·4
Bath.	Ditto	54,572	Ditto	...	1·9

Of the *50* Town Districts 17 were *below* and 32 *above* Bath in average Zymotic Mortality.

2.—MORTALITY FROM ALL CAUSES PER 1000 ANNUALLY.

Age up to 5 Years.	Health Districts Life Table.	English Life Table.
Under 1 Year	2·10	3·66
1 to 2 Years	·61	1·31
2 to 3 ,,	·38	·69
3 to 4 ,,	·27	·45
4 to 5 ,,	·21	·32

3.—MORTALITY PER 1000 ANNUALLY UNDER 1 YEAR IN TOWN DISTRICTS ABOVE MENTIONED.

Quarter ending March 31st, 1878.

	Under 1 Year	Deaths under 1 Year to 1000 Births registered.
Hastings	4·8	120
Southampton	3·7	117
Reading	7·4	204
Cheltenham	5.7	170
Bath	4·6	158
Total of 50 Towns		164

Vide Quarterly Returns of Register General, P. XV.; also Annual Summary for 1877.

TABLE III.

DEATH RATE PER 1,000 OF POPULATION OF ENGLAND AND WALES AT VARIOUS AGES.

Table I. Calculated from English Life Table.

Table II. Calculated from Healthy Districts Life Table.

Part 1, Ages	I.	II.
0	6·44	3·58
5	0·84	0·60
10	0·44	0·34
15	0·53	0·46
20	0·70	0·54
25	1·52	1·22
35	1.69	1·26
45	2·00	1·47
55	2·74	2·22
65	3·61	3.62
75	3·00	3·62
85 and upwards	0·04	1·43

Yearly Death-rate calculated as above :—

I. 24·47 II. 20·37

Above tables calculated to accord with Bath Age Division.

Part 2	I.	II.
Under 1	3·66	2·10
1 — 5	2·77	1·47
5 — 10	·84	·60
10 — 20	.97	·80
20 — 40	3·07	2·39
40 — 60	4·25	3·22
60 — 80	6·54	6·48
80 upwards	3·24	2·44

Vide Table 12, p. cii., and Table 16, p. cxii., Supplement 35th Annual Report of Registrar-General.

2.d.

TABLE IV.

BATH.—For Comparison with Table III.

PART 1.—AVERAGE MORTALITY PER 1000 ANNUALLY OF TOTAL POPULATION AT AGES SPECIFIED.

	1877.	First Quarter, 1878.
Under 1 year	3·1	4·6
1 to 5 years	2·8	2·8
5 to 10 ,,	0.79	0·65
10 to 20 ,,	0·40	0·58
20 to 40 ,,	1·8	3·1
40 to 60 ,,	3·04	4·9
60 to 80 ,,	5·6	7·1
80 and upwards	1·8	3·07

PART 2.—FIRST QUARTER, WINTER QUARTER, 1878.

	Under 1	1 to 5	5 to 10	10 to 20	20 to 40
Population—	1354	3730	5250	16135	11696
Deaths—	63	40	9	8	43
	46·5	10·7	11·7	0·40	3·6

	40 to 60	60 to 80	over 80
Population—	10699	4649	549
Deaths—	67	93	42
	6·2	23.2	76·5

PART 3.—BATH.—ANNUAL RATE PER 1000 LIVING.*

Estimated Population.	Births.	Deaths.	Births.	Deaths.	Deaths under 1 year to 1000 births.
54572	374	345	27·8	25·6	158

CHELTENHAM.—ANNUAL RATE PER 1000.

Population.	Births.	Deaths.	Births.	Deaths.	Deaths under 1 year to 1000 births.
43618	282	280	26·2	24	170

NORTHAMPTON.—ANNUAL RATE PER 1000.

Population.	Births.	Deaths.	Births.	Deaths.	Deaths under 1 year to 1000 births.
55906	549	373	39·8	27·1	213

* 1st Quarter, 1878

TABLE V.

DISTRICT MORTALITY.

Annual average per 1,000 to whole population.

Total Population, 54,752.

Part I	1877.		1st quarter 1878.
Abbey	5·9		6·6
West Walcot	4·7	——	5·5
East Walcot	3·8	——	5·7
Lyncombe and Widcombe	6·1	——	8·2
Bathwick...	1·5	——	2·1

Part 2 Annual Average per 1,000 to District Population.

1877.	Population.	1877.	1st quarter, 1878
Abbey	10,501	29·9	33·1
West Walcot ...	14,420	17·4	20·2
East Walcot ...	11,359	17·4	26·7
Lyncombe and Widcombe	11,020	29·0	39·2
Bathwick	5,271	15·5	21·2

Part 3 MORTALITY STATISTICS, 1877.

Bath and three of Twenty large English Towns.

Deaths under 1 year to 1,000 births registered.		Annual rate of Mortality per 1000 living at ages named.		Population above 65. 1871.	Proportion to total Population.
		Aged 1 to 60	Aged 60 and upwards		
In 20 Towns ...	154	13·7	74·8		
Norwich ...	154	10·3	70·3		
Bristol & Clifton	154	12 7	69·5	3,303	About 55th of whole Population.
Nottingham ...	169	12·1	70·9		
Bath	158	11·1	87·5	4,078	Less than 13th of whole Population.

Vide Page xi., Table 4, Annual Summary for 1877, Registrar-General.

N.B.—Population of Bristol and Clifton, in 1871—182,552.

,, of Bath, in ditto — 52,557.

LEAFLET No. 4.

CITY OF BATH.

How Infants should be Fed.

The Registrar General for England and Wales, in his last Annual Report, records no fewer than 40,616 deaths of children under five years of age as due to diarrhœa or enteritis: nearly all these deaths occurred in the summer as the result of improper feeding. In the City of Bath we lost on an average one child a day during the month of September from the same preventable cause.

Your attention is, therefore, particularly called to the following information, the Sanitary Committee being hopeful that these leaflets will be useful to many people who have not had the opportunity of studying the conditions of health.

There are certain principles which should be always borne in mind.

Vigour in adult life depends on the care expended in feeding, clothing, and otherwise looking after the child.

Every disease is an injury to health of a permanent nature, and leaves the system more or less weaker than it found it.

All dirty conditions in or near a house are calculated to produce disease, or to lower the health. Plenty of fresh air and sunlight are necessary to robust health, and their absence or diminution means disease.

Close attention to the instructions given in the leaflet will save many lives in Bath every year.

W. H. SYMONS, D.P.H.,

Public Health Office,
Guildhall, Bath.

Medical Officer of Health.

Source: MOH Report for Bath 1903

How Infants should be Fed,

WITH SOME ADDITIONAL INFORMATION.

1. Infants should, whenever it is at all possible, be fed at the breast for a period of six months at least: but, if that cannot be done, for as long a period as may be, breast milk is, almost always, much more wholesome for an infant than cow's milk.

2. They should have the breast not oftener than every two hours during the day, and every four hours during the night. At the end of three months they should be suckled at longer intervals. When they are fretful or suffer from indigestion, it will often be found that they are being overfed, and diminishing their diet will then put them right.

3. The mother should, in order to supply wholesome milk to her child, partake only of plain and wholesome food, avoiding intoxicating drinks such as spirits and beer. If she suffer from sore nipples, they should be washed with warm water after the child has fed, and some glycerine should then be applied.

4. When, from want of milk, or from an absolute necessity of going to work, a mother cannot suckle her infant, the next best thing, as a rule, is to feed it on cow's milk, prepared thus:—Half-a-pint of good fresh milk, and one pint of water with a small teaspoonful of white sugar, are mixed and boiled, and then placed in a clean jug, covered with a clean plate. Four tablespoonfuls of this should be placed in the feeding bottle each time it is used, and after each time the child is fed the bottle should be cleaned, or a clean one used. The infant should not be fed oftener than every two hours in the day time, and every four hours during the night. This will be the diet up to the age of six weeks.

When the child is at least six weeks old, one pint of cow's milk may be added to one pint of water, and eight tablespoonfuls used to each meal, the interval between meals being increased.

At the ages three to six months, two pints of cow's milk should be mixed with one pint of water, eight tablespoonfuls being used to each meal. The intervals between meals, and the quantity used at each meal, may be increased as occasion requires. But it is necessary always to bear in mind the danger of over feeding.

In all cases the mixture of milk and water should be boiled and kept in a clean jug, as before mentioned. Only a small quantity should be got ready at one time.

Up to the age of six months it will generally be found better to use no other food whatever than milk. On no account should sops or solid food be given.

5. The bottle used should be the old-fashioned boat bottle without any tube. The india-rubber teat comes off, and can be easily cleaned with water containing soda. The bottle and teat should be cleaned after each use, with scalding water. Bottle, teat, and a cleaning brush may be had for about a shilling. It is absolutely essential to keep the bottle and teat clean.

6. An infant should not be left by itself with the teat in its mouth.

Diet from Six Months to Twelve Months old.

FIVE MEALS A DAY. ALL MILK BOILED.

First meal, 7 a.m.—One teaspoonful of farinaceous food to about twelve tablespoonfuls of sweetened milk, mixed and well boiled.
Second meal, 11 a.m.—The same quantity of pure milk.
Third meal, 1.30 p.m.—Same as first.
Fourth meal, 4.30 p.m.—Same as second.
Fifth meal, 10 p.m.—Same as first.

Diet for a Child from Twelve to Eighteen Months.

First meal, 7 a.m.—Bread and milk, or oatmeal or hominy porridge, with plenty of milk.
Second meal, 11 a.m.—Twelve tablespoonfuls of milk.
Third meal, 1.30 p.m.—Bread crumbs and gravy, or a slackly boiled egg and bread and butter.
Fourth meal, 5.30 p.m.—Bread and milk.
Fifth meal.—Milk to drink.

7. Infants should not be left on the floor, as they are thus exposed to draughts and infectious dirt. They should be placed at a height of at least two or three feet from the floor.

8. They should be warmly clothed, but not with many clothes. Their clothing should not fit tight about the body, but cling loosely so as to give free play to the lungs. The limbs should be covered equally with the body. To allow a child to feel cold is as bad as to deprive it of food, while giving it all the effort of digestion.

9. Mothers are strongly warned against giving children soothing medicines to lend them to sleep.

10. When an infant continues to suffer from indigestion or diarrhœa, in spite of every care in feeding it, the mother should consult

2.e

Statistics Compiled From the Vaccination Registers for the Sub-District of Lyncombe, Bath

Lyncombe	1872	1892	1911
Births:	**349**	**337**	**312**
Dolemeads			
Legitimate	70	61	31
Illegitimate	5	5	2
Total	**75**	**66**	**33**
Workhouse			
Legitimate	4	1	9
Illegitimate	13	11	16
Total	**17**	**12**	**25**
Lyncombe (rest)			
Legitimate	248	256	251
Illegitimate	9	3	3
Total	**257**	**259**	**254**
Deaths	**27**	**41**	**27**
Dolemeads			
Legitimate	6	9	1
Illegitimate	1	3	0
Total	**7**	**12**	**1**
Workhouse			
Legitimate	0	0	3
Illegitimate	3	2	2
Total	**3**	**2**	**5**
Lyncombe (rest)			
Legitimate	17	27	19
Illegitimate	0	0	2
Total	**17**	**27**	**21**

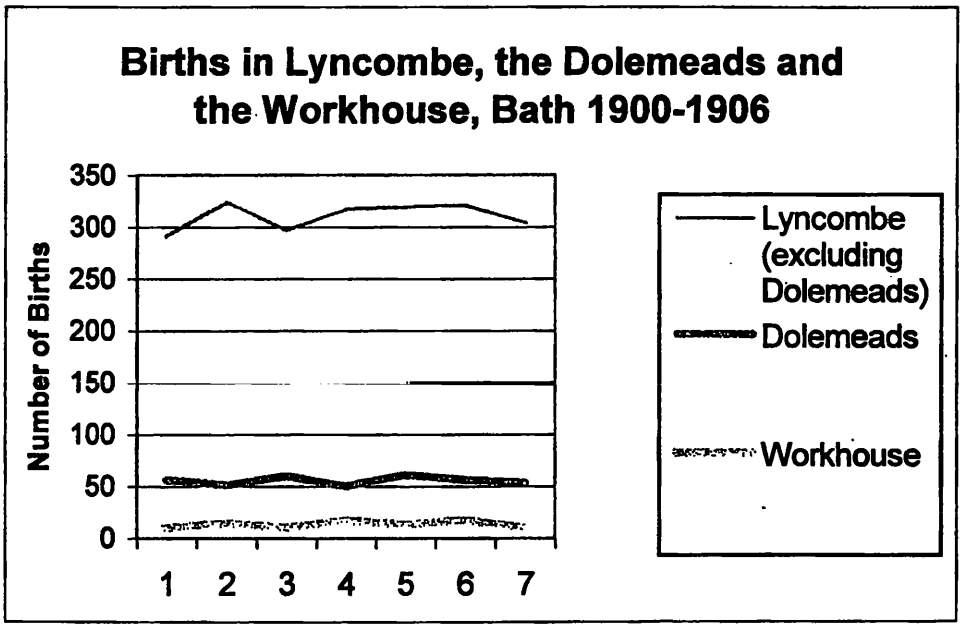
Source: Vaccination Registers for Lyncombe, Bath 1872, 1892, 1911

Numbers of legitimate and illegitimate births and deaths in the Dolemeads and Bath Workhouse in the sub-district of Lyncombe, Bath 1900-1906

Births	Dolemeads			Workhouse			Rest of Lyncombe
	Total	Legitimate	Illegitimate	Total	Legitimate	Illegitimate	Total
1900	56	54	2	9	0	9	282
1901	51	50	1	15	3	12	310
1902	60	60	0	10	0	10	286
1903	50	46	4	18	7	11	299
1904	61	61	0	13	3	10	306
1905	56	54	2	18	6	12	303
1906	54	52	2	10	0	10	294

Deaths	Dolemeads			Workhouse			Rest of Lyncombe
	Total	Legitimate	Illegitimate	Total	Legitimate	Illegitimate	Total
1900	10	9	1	3	0	3	34
1901	6	6	0	5	2	3	25
1902	8	8	0	1	0	1	21
1903	4	3	1	5	2	3	20
1904	11	11	0	0	0	0	34
1905	6	6	0	1	0	1	15
1906	3	2	1	6	0	6	27

Source: Entries in theVaccination Registers for Lyncombe 1900-1906



Infant births and deaths for Bathwick, Bath 1872, 1892

Bathwick,Bath	1872	1892
Births:	144	103
Legitimate	142	102
Illegitimate	2	1
Deaths:	16	6
Legitimate	15	6
Illegitimate	1	-
Births by area:		
Bathwick (city)	90	45
Claverton	6	9
Combe Down/Monkton Combe	40	45
Bathampton	8	4

No.Vaccinations:	124	75
% Vaccinated	86%	73%
Unaccounted for:	3	34

Source: Vaccination Registers for Bathwick, Bath 1872, 1892

Winter Quarter 1872
Twenty fourth Quarterly Report

The recorded deaths have been 42 below the average of the past 11 years; due, I think, in great part to the mild winter we have experienced. In the years 1861, 1863, & 1869 - the mortality was below that of the present Quarter; in the other years since 1860, largely in excess. The deaths were below the average in all the Sub-districts - excepting that of East Walcot; and in the Abbey Sub-district the high mortality in the United Hospital augmented the death rate of that portion of the Borough - which was otherwise exceptionally low. In the Workhouse the mortality was far above average amount. (Deaths from Diseases of the Contagious or Epizootic Class numbered 35 (including Diarrhœa); the mortality from this class was considerably in excess of that of 1871.; the most fatal disease being Scarlatina which has been somewhat prevalent during the months of March and provided 10 deaths during the Quarter; 9 of these were children. Typhoid Fever caused a mortality of 4; Hooping Cough of 6; and Diarrhœa of 4. One death was registered from Typhus and one from Diphtheria.

Sixty three deaths were due to Diseases of Constitutional character, of which 33 were caused by Pulmonary Consumption - 11 less than in the corresponding Quarter of last year; 4 to Other Scrofulous affections, 9 to Dropsy; and 4 to Cancer.

Of local Diseases, those of the Nervous System showed a mortality of 38; and of these, 30 deaths occurred to young children from Convulsions; 5 adults died of Apoplexy; 9 of Diseases affecting the

DEATHS Registered during the ~~Week~~ Quarter ending ~~Wednesday~~ Sunday, March 31st 1872

	Males.	Females.	Total.	Average of 11 years (1861-1871.)
Sub-District of the Abbey	46	32	78	— 92.8
„ „ „ West Walcot	29	44	73	— 96.4
„ „ „ East Walcot	42	36	78	— 69.5
„ „ „ Lyncombe and Widcombe	40	33	73	— 84.6
Parish of Bathwick	11	16	27	— 27.5
Total in the Borough	168	161	329	341.1

Of these 93 were under 5 years of age; 25 between 5 and 20; (90 years.
101 between 20 and 60; ~~and~~ 36 above 60; 43 above 70; 30 above 80; 1 above

Ratio of Mortality to Population ... 25 per 1000.

Corresponding ~~Week~~ Quarter of last Year ... 29 „ „

~~Average of ... Quarter 18~~ , ... „ „

~~Corresponding period of last Year~~ ... ... „ „.

Deaths in the United Hospital 26

„ in the Workhouse ... 24 (22 from Bath Parishes).

the Brain; 7 of Paralysis; 2 of Tetanus; and 1 of Epilepsy.
Diseases of the Circulation caused 27 deaths, all due to various forms of Heart Disease.
Diseases of Respiration caused 68 deaths, being 4 less than in the corresponding Quarter of last year. Bronchitis is usually very fatal at this period of the year, but owing to the mild

Winter the mortality from it has amounted to 40 only. In the Winter Quarter of 1870 it caused 91 deaths, and in 1841-47 A mortality of 4 deaths occurred from Asthma, 12 from Pneumonia; 9 from Congestion of the Lungs: and 1 death from Croup.

Diseases of the organs of Digestion caused 114 deaths (Excluding Diarrhœa). Other Local Diseases caused 16 deaths.

Five Infants died shortly after their Premature Birth; thirty persons died of old Age, 24 being above 70 years. The effects of the mild winter are again shown in the low mortality from this cause. One person was poisoned by Alcohol; two were drowned; one was suffocated; three died from Fractures; one committed Suicide by Hanging; one person was "Found dead"; and a death was recorded as Visitation of God.

Fifteen Coroner's Inquests were held.

The highest weekly Mortality was 34 in the week ending 6th March: the lowest 15, in that ending 21st February.

The amount of sickness prevailing in the Borough has been below the average.

The Births registered amounted to 373, exceeding the number of deaths by 44. The Birth rate was 28.4. Corresponding Quarter of last year 30.2

The mean height of the Barometer 29.686 in. Mean Temperature 42.9. Rainfall 10.876 in. on 64 days.

April 16. 1872.

C. J. Baker

Numbers of Legitimate and Illegitimate Births and Deaths for Lyncombe 1872, 1892, 1911

Births:	**1872**	**1892**	**1911**	**Total for 3 years**
Legitimate	322	318	291	931
Illegitimate	27	19	21	67
Total	349	337	312	
Deaths:				
Legitimate	23	36	23	82
Illegitimate	4	5	4	13
Total	27	41	27	
IMR				
Legitimate				88
Illegitimate				194

Source: Vaccination Registers for Lyncombe 1872, 1892, 1911

APPENDIX 3. THE CITY OF BATH

3.a. Map showing the location of the City of Bath

3.b. Map showing the location and extent of the Bath Urban and Rural Sanitary Districts c.1872

3.c. Map showing the location and extent of the Registration District of Bath c.1872

3.d. Map showing the sub-districts comprising the Bath Urban Sanitary district

3.e. Diagram showing the Growth of Towns 1801-1931

3.f. Population figures for the City of Bath between 1871-1911

3.g. Summary of the population and deaths in the different districts of Bath – MOH Report for Bath 1864

3.h. Meteorology statistics for Bath 1866-1885

3.i. Map showing the development of new housing in Oldfield Park and South Twerton, Bath 1904

3.j. Diagram: Occupational structure of Bath (MOH Report for Bath 1898)

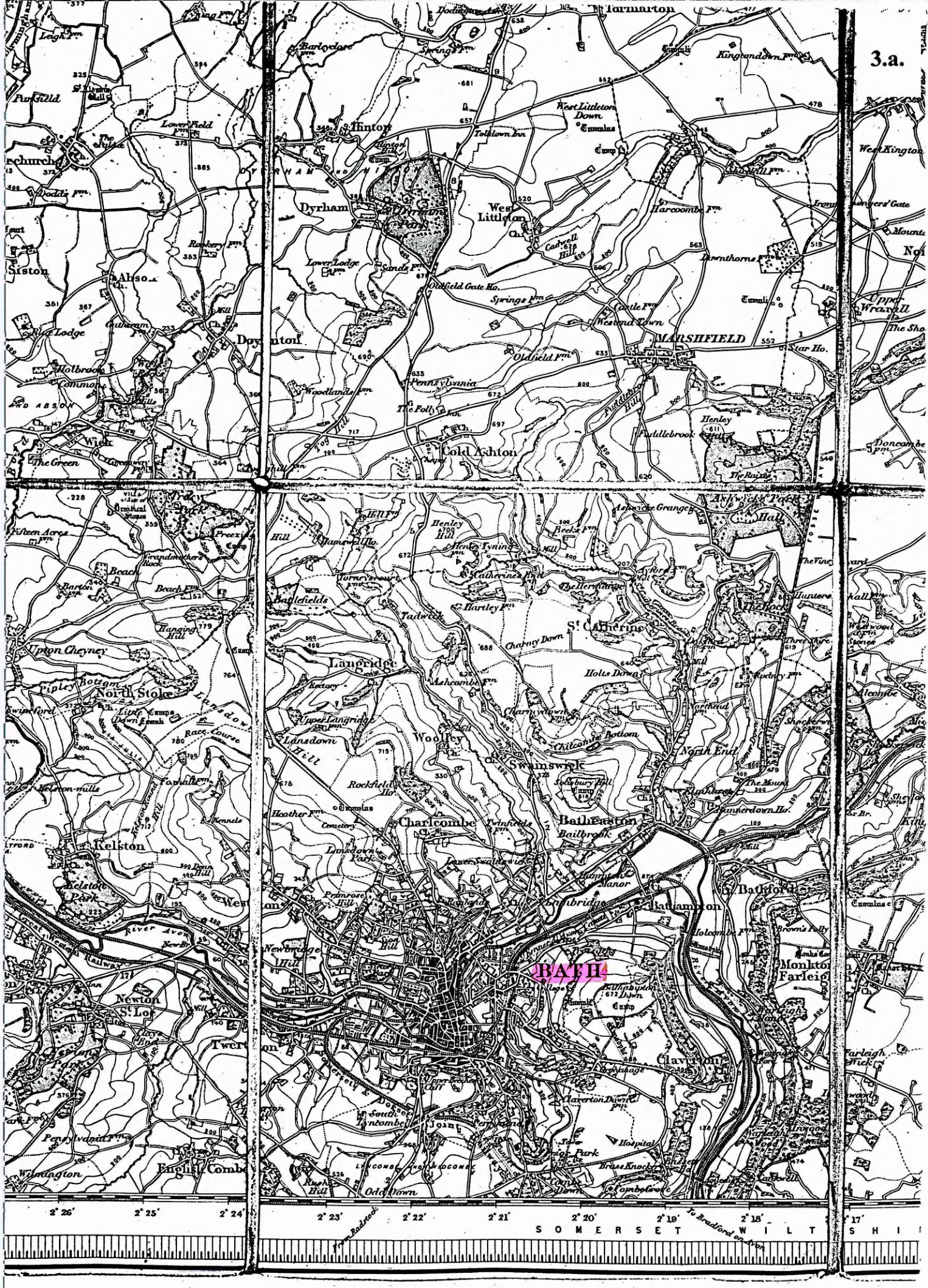
3.k. Bath: Population; condition as to marriage; birthrates 1881, 1891, 1901 (MOH Report for Bath 1907)

3.l. Table: Population of Bath by District (1871) and breakdown of population by age (1891)

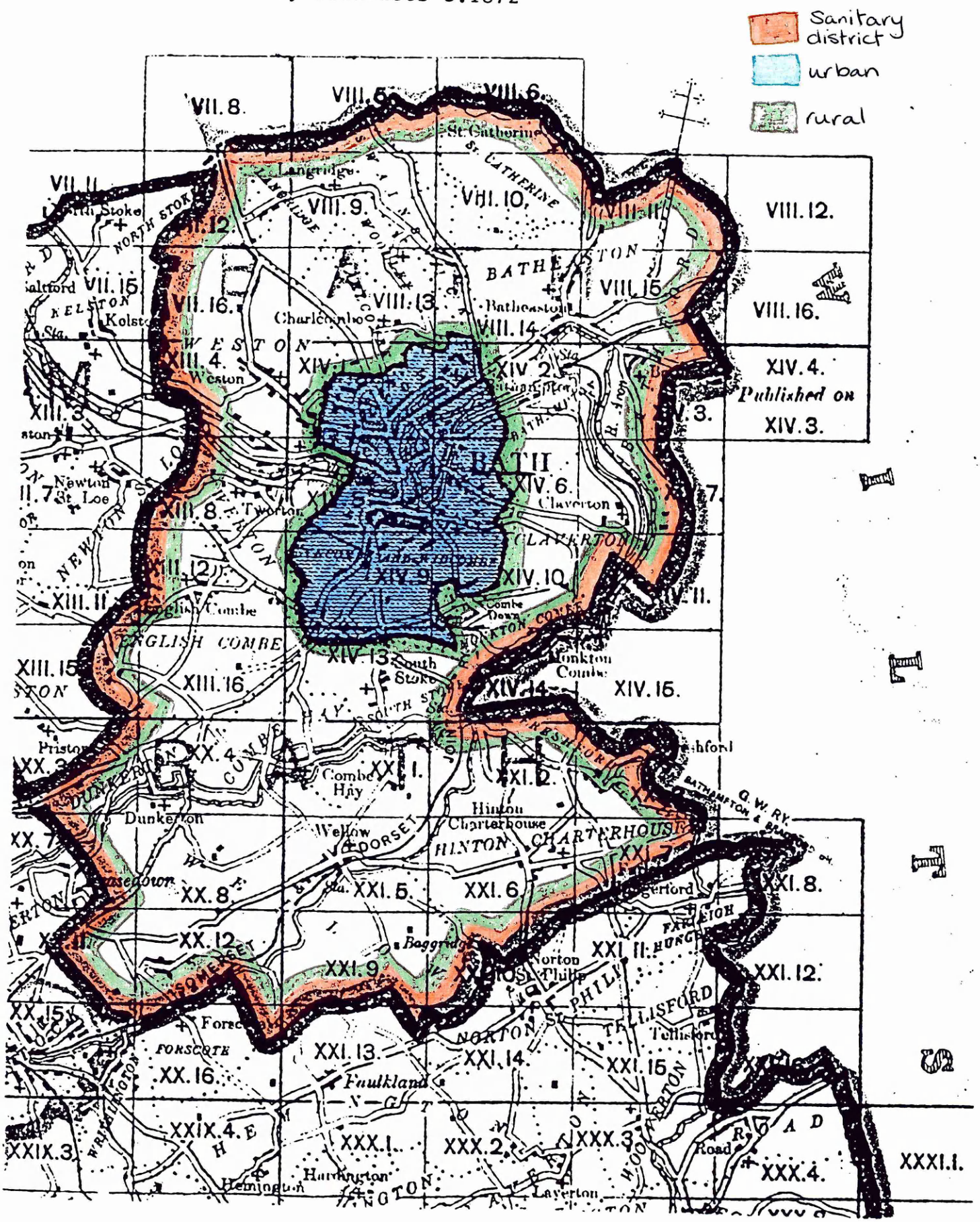
3.m. Table: Civil condition of persons aged 15 years and over, Bath 1871, 1891

3.n. Map showing routes of principal railways into Bath c.1880

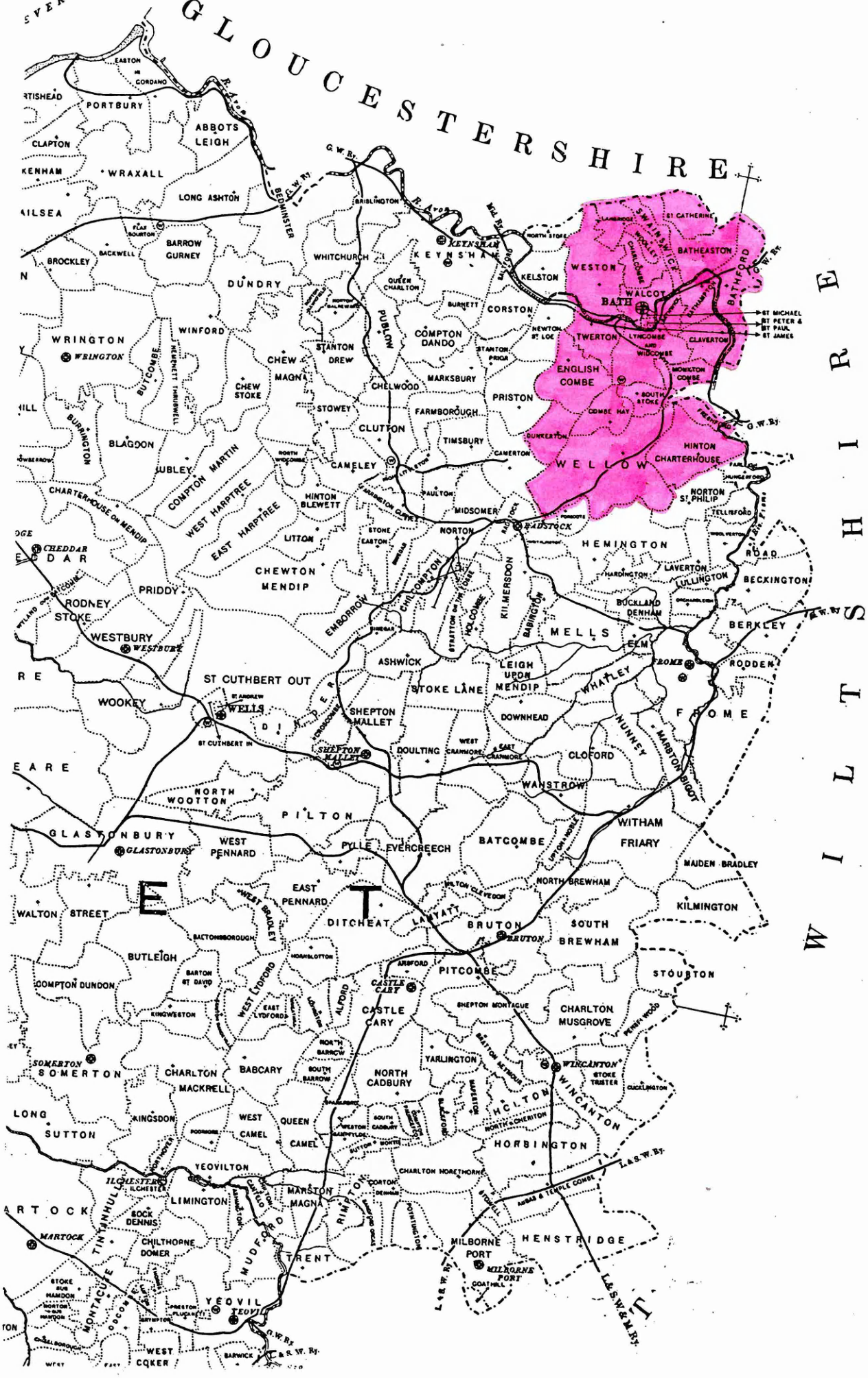
3.o. Occupational Structure of Bath from the 1871 and 1891 Census


3.a.
BATH
Tormarton
Dyrham
West Littleton
Cold Ashton
MARSHFIELD
Lansdown
North Stoke
Upon Cheyney
Kelston
Newton St. Loe
Englishcombe
Wilmington
Langridge
Woolley
Swainswick
Charlcombe
Bathampton
Claverton
St. Catherine
Batheaston
Bailbrook
Badminton
Monkton Farleigh
Siston
Abson
Wick
Doynton
Holbrook Commons
Oldfield Fm.
Star Ho.
Cadwell Hill
Fiddlebrook Hill
Lansdown Hill
Kingsdown Fm.
Harcombe Fm.
Downthorns
Springs Fm.
Sands Fm.
Lower Lodge
Oldfield Gate Ho.
Woodlands Fm.
The Polly
Cold Ashton Hill
Henley
Fiddlebrook
The Rayns
Upper Wraxall
Doncombe Fm.
Tadwick
Battlefields
Hanging Hill
Beach
Barton
Race Course
Kelston Park
Primrose Hill
Newbridge Hill
Rockfield Ho.
Heather Fm.
Cemetery
Dunkerton Park
Lower Swainswick
Bailbrook
Manor
Holcombe Fm.
Brown's Folly
Claverton Down
Hospital
Prior Park
Brass Knocker Hill
Odd Down
Combe Down
Sham Castle
Sydney Gardens
Sydney Pleasure
Entry Hill
Kennels
Pen Pits
Wellow Brook
Great Western Railway
River Avon
Lincombe
Lyncombe
Twinfields
Bathampton Down
Hampton Down
Bathampton Camp
Claverton Down
Ashley Grange
Ashley Park
Hall
Hunters Hall
The Hock
Three Barrows
Rudmoor Fm.
Shockerwick
Bathford
Batheaston
Farleigh Wick
Somerset
Wilts
2° 26'
2° 25'
2° 24'
2° 23'
2° 22'
2° 21'
2° 20'
2° 19'
2° 18'
2° 17'
From Radstock
To Bradford on Avon

Map showing the location and extent of the Bath Urban and Rural Sanitary Districts c.1872



Map showing the location and extent of the Bath Urban and Rural Sanitary Districts c.1872



Map of the
TY & BOROUGH OF BATH,

DUCED BY PERMISSION, AND CORRECTED
ESSRS COTTERELL & SPACKMAN'S SURVEY.

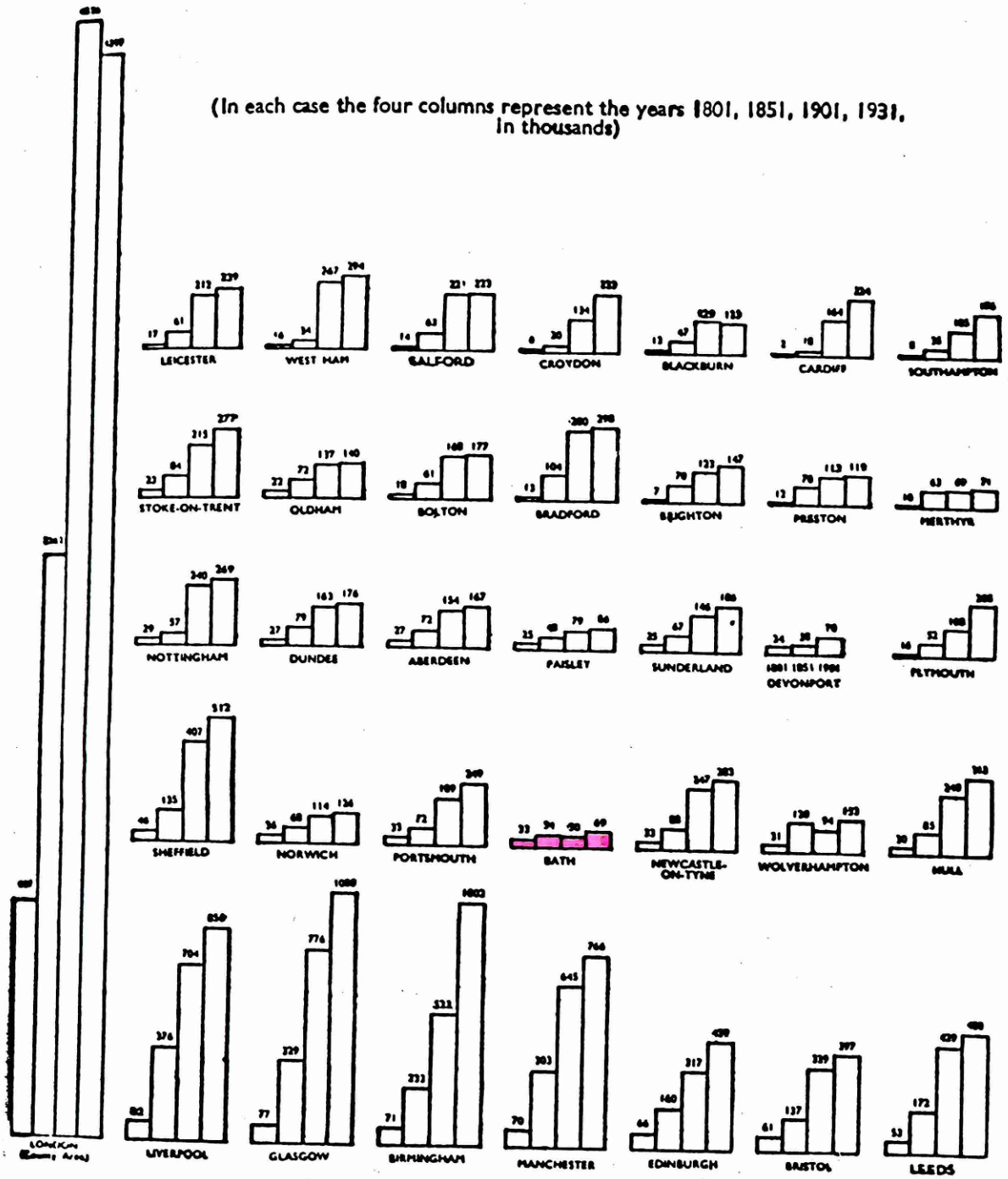
3.d.

REFERENCE.

1 ABBEY CHURCH
2 ST MICHAEL'S CHURCH
3 ST JAMES'S CHURCH
4 WALCOT CHURCH
5 BATHWICK CHURCH
6 TRINITY CHURCH
7 CHRIST CHURCH
8 OCTAGON CHAPEL
9 LAURA CHAPEL
10 ST PAUL'S CHURCH
11 ST JOHN'S HOSPITAL
12 PENITENTIARY CHAPEL
13 ST MARGARET'S CHAPEL
14 MORAVIAN CHAPEL
15 ROMAN CATHOLIC CHURCH
16 ARGYLE CHAPEL
17 NEW JERUSALEM CHAPEL
18 UNITARIAN CHAPEL
19 FRIEND'S MEETING HOUSE
20 PLYMOUTH BRETHREN'S CHAPEL
21 BAPTIST CHAPEL
22 IRVINCITE CHAPEL
23 ASSEMBLY ROOMS
24 THEATRE
25 MINERAL WATER HOSPITAL
26 UNITED HOSPITAL
27 PUMP ROOM
28 KING'S & QUEEN'S BATHS
29 CROSS BATH
30 HOT BATH PUMP ROOM
31 KINGSTON BATHS
32 ROYAL PRIVATE BATHS
33 BLUE COAT SCHOOL
34 MARKET
35 GRAMMAR SCHOOL
36 SAVINGS BANK
37 ST CATHARINE'S HOSPITAL
38 WEYMOUTH HOUSE SCHOOLS
39 BELLOTT'S HOSPITAL
40 LITERARY INSTITUTION
41 POST OFFICE
42 GUILDHALL
43 PERCY CHAPEL
44 THE YORK HOUSE
45 THE CASTLE HOTEL
46 THE LION HOTEL
47 THE Gd PUMP ROOM HOTEL
48 THE ROYAL HOTEL
49 ST ANDREWS CHURCH
50 ST LUKE'S CHURCH
51 MANVERS ST CHAPEL
52 WESTGATE BDGS. CHAPEL

Reference to Parliament Districts & Parishes
Walcot
Lyncombe & Widcombe
Bathwick
S. James
S. Michael
SS Peter & Pau.
Twerton.

TWERTON
WESTON
WESTON PARK
WALCOT CEMETERY
GREAT WESTERN RAILWAY
SOMERSET AND DORSET RAILWAY
MIDLAND RAILWAY
BATH CITY GAOL
MILITIA DEPOT
WIDCOMBE ST JAMES CEMETERY
RUSH HILL
OLD WELLS ROAD
ENGLISHCOMBE LANE
WESTMORELAND SIDING
GREENWAY LANE
BEECHEN CLIFF
CRANWELLS
ROYAL VICTORIA PARK
THE HIGH COMMON
SUMMERHILL HOUSE
WESLEYAN COLLEGE
FONTHILL ROAD
COLLEGE ROAD
HAMILTON ROAD
RICHMOND ROAD
ALL SAINTS CHAPEL
MARLBOROUGH BUILDINGS
ROCK HOUSE
SCHOOL FOR THE ORPHANS OF MILITARY OFFICERS
ST STEPHEN'S CHURCH
RICHMOND HILL
ST MARY'S CHURCH
LYNCOMBE HOUSE
BADATELLE HILL
LYNCOMBE VALE
PRIORY HOUSE
FOX HILL LANE
WOODLANDS
THE CLOISTERS
TUNNEL
HAROLDSLEIGH LANE
CARRIAGE ROAD
PARK LANE
PRIOR PARK
THE PRIORY
WIDCOMBE HILL
WIDCOMBE ROAD
CAMBRIDGE TER.
ABBEY VIEW VILLAS
STONELEIGH VILLAS
BATHWICK PARK
BATHWICK HILL
BATHWICK NORTH ROAD
CLEVELAND WALK
WINDSOR TER.
BETHESDA HOUSE
VELLORE
SMALCOMBE WOOD
BATHWICK HILL NO.
SHAW CASTLE
HENRIETTA ST
GAY STREET
QUEEN SQUARE
BELVEDERE
PULTENEY ROAD
VILLA FIELDS
MIDSUMMER BDGS.
MIDSUMMER PL.
BAY FARM
ST SAVIOURS CHURCH
ELDON PL.
GLOUCESTER ROAD
GREAT WESTERN AVON CANAL
LAMBRIDGE HO.
BAILBROOK VILLAS
BAILBROOK HOUSE
LONDON ROAD
NEW WARMINSTER ROAD
COMBE DOWN
CLAVERTON DOWN
HAMPTON DOWN



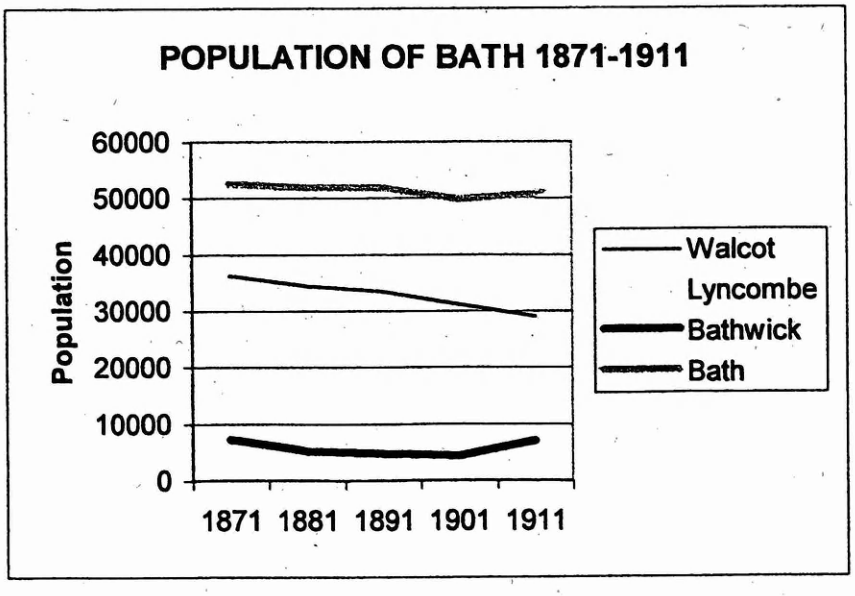
THE GROWTH OF TOWNS, 1801–1931

Source: Cole & Postgate (1981)

Population of the City of Bath 1871-1911

	1871	1881	1891	1901	1911
Sub-district					
Walcot	36266	34370	33359	31183	29020
Lyncombe	11020	12277	13770	14372	17497
Bathwick	7211	5167	4714	4284	7074
Total	52557	51814	51843	49839	53591

Source: MOH Reports for Bath



A Synoptical Table or Summary of the Population, Deaths, &c., in the different Districts of the Bath Union, as recorded in the previous pages. *(This Calculation is in round numbers, without fractions).*

Districts.	Population.	Deaths	Deaths from Scarlatina.	Per centage of Scarlatina to the Deaths.	Rate of Mortality to the 1000.
Lansdown ..	15,013	359	74	20	24
Walcot ..	11,268	293	44	14	27
Abbey* ..	11,086	331	50	15	30
Lyncombe and Widcombe	9,900†	267	36	14	30
Bathwick ..	5,266	81	10	12	16
	52,533	1331	214	75	127

Average No., 43 to each District. Average No., 15 to each District. Average No., 26 to each District.

About 25 Deaths in every 1000 of the Population for the City.

Weston ..	3,127	66	21	17	22
Batheaston..	1,698	32			19
Bathford ..	892	19			20
Twerton ..	3,012	102	42	42	34
	8,729	219	63	59	95

Average No., 16 to each Parish. Average No., 15 to each Parish. Average No., 24 to each Parish.

About 24 Deaths in every 1000 of the Population for the Rural Districts bordering on the River.

* Vide Table of Deaths in the Bath United Hospital.

† This Calculation is upon 9,000 of the Population only, leaving out the 900 for the Workhouse.

Source: Hanham (1864)

Meteorology Statistics for Bath 1866-1885 inclusive

Temperature

Mean Temperature: 50.5F

Season	Mean	Highest	Lowest	Range
Spring	48.4	51.2	45.8	5.4
Summer	60.3	63.5	58.1	5.4
Autumn	50.7	46.3	36.4	9.9

(temperature in degrees fahrenheit)

Thirteen out of 20 winters had a mean temperature of 40 degrees.

Rainfall

Mean rainfall 32.064 inches.

Maximum rainfall 42.294 inches in 1882

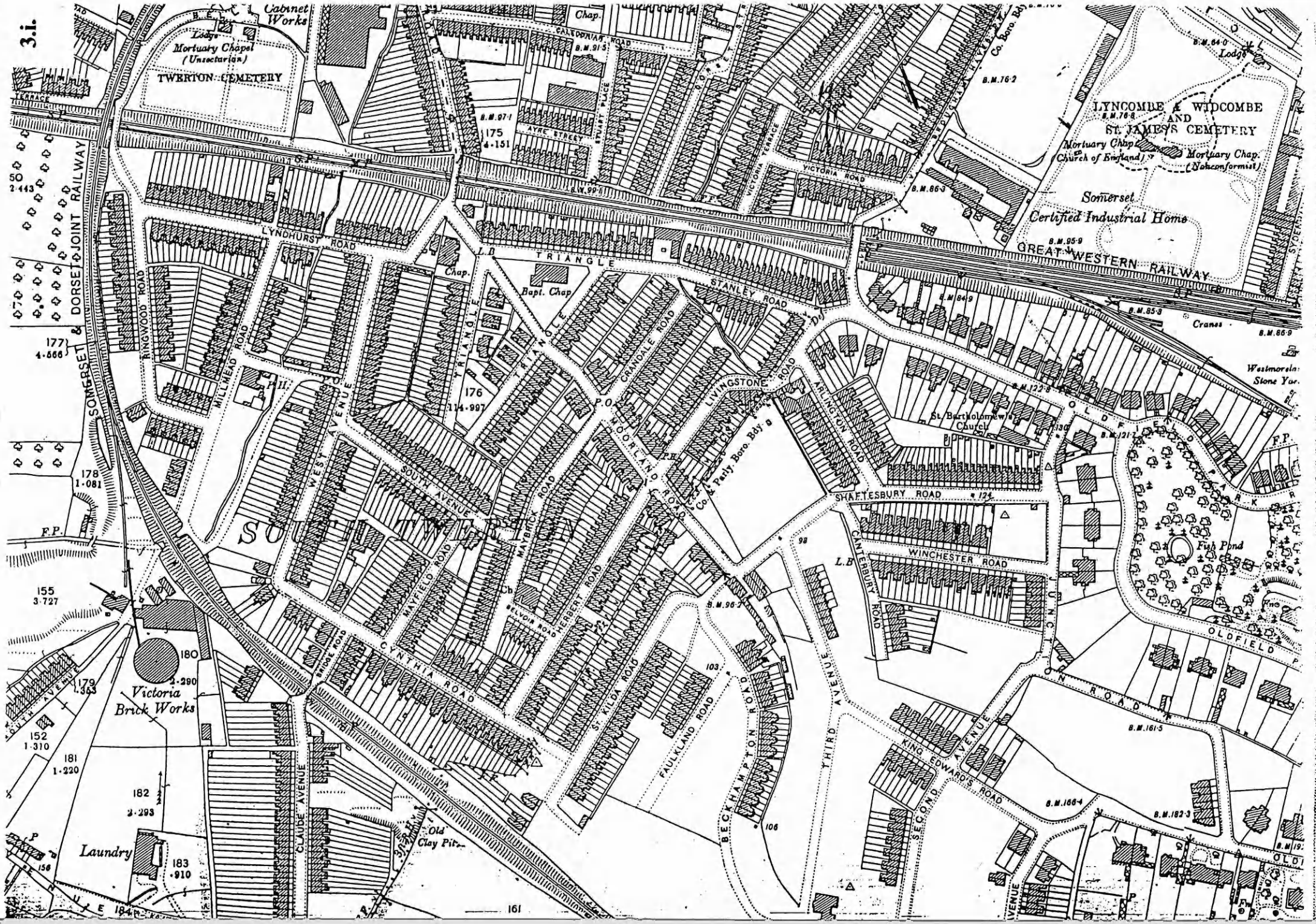
Autumn is the wettest season and spring the driest. January, September and October are the wettest months.

Source:Report of the Royal Medical and Chirurgical Society of London (1895) *Climates & Baths of Great Britain vol.1.* pub. Macmillan & Co.

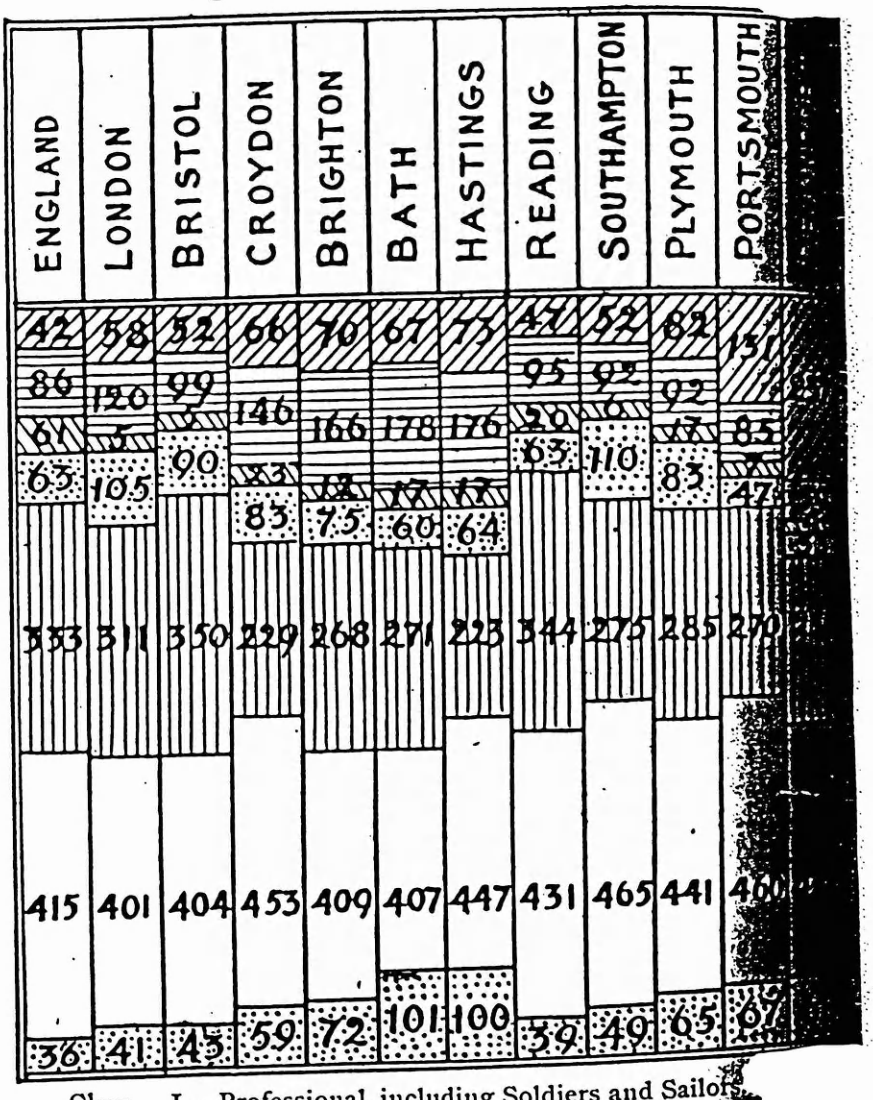
The Floods of the Past Century.

Date of Floods.		Height above Weirs.
1809	... ...	12 feet 6 inches
1823	November	13 „ 3 „
1866	January	8 „ 3 „
1867	March	8 „ 0 „
1873	March	3 „ 6 „
1875	July	4 „ 6 „
1875	November	7 „ 9 „
1877	November	6 „ 6 „
1882	October	12 „ 6 „
1888	November 13th ...	7 „ 3 „
1889	March 9th	9 „ 6 „
1891	... ...	6 „ 6 „
1894	November 13th ...	15 „ 0 „
1894	November 15th ...	16 „ 0 „
1897	February 6th	5 „ 9 „
1900	February 16th	8 „ 6 „
1900	December 30th ...	14 „ 7 „

Source: MOH Report for Bath (1900)


3.i.
Cabinet Works
Lodge
Mortuary Chapel (Unsectarian)
TWERTON CEMETERY
Chap.
CALEDONIAN ROAD
B.M.91·5
B.M.97·1
175
4·151
AYRE STREET
STUART PLACE
VICTORIA TERRACE
VICTORIA ROAD
B.M.76·2
B.M.64·0
Lodge
LYNCOMBE & WIDCOMBE AND ST. JAMES'S CEMETERY
Mortuary Chap. (Church of England)
Mortuary Chap. (Nonconformist)
Somerset Certified Industrial Home
B.M.86·3
B.M.95·9
GREAT WESTERN RAILWAY
B.M.84·9
B.M.85·3
Cranes
B.M.86·9
Westmoreland Stone Yard
B.M.122·8
OLDFIELD ROAD
St. Bartholomew's Church
B.M.121·2
F.P.
PARK
Fish Pond
Fnd
OLDFIELD PARK
SOMERSET & DORSET JOINT RAILWAY
TERRACE
50
2·443
177
4·566
RINGWOOD ROAD
MILLMEAD ROAD
Ph.
P.O.
WEST AVENUE
SOUTH AVENUE
LYNDHURST ROAD
L.B.
TRIANGLE
Bapt. Chap
STANLEY ROAD
CRANDALE ROAD
LIVINGSTONE ROAD
ARLINGTON ROAD
SHAFTESBURY ROAD
124
176
114·997
MAYFIELD ROAD
MAYBRICK ROAD
HERBERT ROAD
BELVOIR ROAD
CYNTHIA ROAD
ST. KILDA ROAD
FAULKLAND ROAD
BECKHAMPTON ROAD
THIRD AVENUE
CANTERBURY ROAD
WINCHESTER ROAD
98
103
106
B.M.96·7
B.M.161·5
KING EDWARD'S ROAD
SECOND AVENUE
B.M.166·4
B.M.182·3
178
1·081
F.P.
155
3·727
180
2·290
Victoria Brick Works
179
1·363
152
1·310
181
1·220
182
2·293
Laundry
183
·910
156
CLAUDE AVENUE
Old Clay Pit
161
184

Occupations per 1,000 over Ten Years of Age.
England and Southern Towns.



Class I.—Professional, including Soldiers and Sailors.
Class II.—Domestic, including Indoor Servants.
Class III.—Agricultural and Fishing.
Class IV.—Commercial.
Class V.—Industrial and Trading.
Class VI.—Unoccupied? including Wives and Mothers.
Sub-class VIa.—Living on own means, retired.
The different Classes (I—VI) are set in order from above wards.

Source: MOH Report for Bath 1898

The Population—50,000.

The population of Bath, as enumerated in 1901, was 49,839, and in previous census returns as follows :—

1801	1811	1821	1831	1841	1851	1861	1871	1881	1891
33,951.	38,090.	46,688.	50,800.	53,206.	54,240.	52,528.	52,528.	51,814.	51,844.

The Registrar-General, in estimating population for inter-censal periods, assumes that the increase or decrease of the previous decade has continued, and he estimates the population of Bath for the middle of 1907 as 48,885. I have many reasons for thinking this an under-estimate, and for the purpose of calculating the rates given in this report I take the population as 50,000, distributed among the various districts as follows :—Walcot 31,200 ; Lyncombe and Widcombe, 14,500 ; Bathwick, 4,300. (*Vide* A.R. 1905, p. 7).

BATH Population. Condition as to Marriage at various age periods. Birthrates:—

	1881	1891	1901
Enumerated population	51,814	51,834	49,830
Married women aged 15 to 20 years...	36	24	17
" " 20 " 25 " ...	559	503	463
" " 25 " 35 " ...	2,190	2,154	2,104
" " 35 " 45 " ...	2,067	2,076	2,139
" " 15 " 45 " ...	4,852	4,757	4,723
Legitimate births	1,250	1,100	940
Births per 1,000 married women, Bath	258	231	199
" " " England	286	268	235
Births per 10,000 population, Bath ...	254	221	196
" " " corrected	301	271	241
" " " England	339	314	285

Births Attended by Midwives.	*1906.*			*1907.*		
Age of Mother.	Number & Sex.		Percent of Births.	Number & Sex.		Perc't of Births
	Male.	Female		Male.	Female	
17 to 20 years ...	6	4	2	6	8	2
20 " 25 " ...	62	61	23	63	42	18
25 " 30 " ...	58	82	26	98	73	30
30 " 35 " ...	61	65	24	80	77	27
35 " 40 " ...	41	51	17	41	48	16
40 " 45 " ...	25	19	8	18	14	6
45 and upwards ...	...	...	...	4	2	1
All ages	253	282	100	310	264	100

Total Births Apl. 1st to Dec. 31st, 1905, 709 ; 1906, 929 ; 1907, 888.
Percentage attended by Midwives, " 53 ; " 58 ; " 65.

Source: MOH Report for Bath (1907)

Population of Bath By District 1871

Population of city: **52,557** **(males 21,197, females 31,360)**

Population of Registrar's District: **69,591** **(males 29,297, females 40,294)**

	Males	Females	Total
Twerton	3666	3759	7425
Bathwick	2700	4511	7211
Abbey	4459	6053	10512
Lyncombe	5068	5952	11020
Walcot	4579	6588	11167
Lansdown	5262	9325	14587
Batheaston	3563	4106	7669

Source: 1871 Census Report for England & Wales

Breakdown of Population of Bath By Age 1891

Population: Urban District: **51,844** **(males 21,125 females 30,719)**
Rural District: **23,352** **(males 11,139, females 12,213)**

Registrar's District: **75,196** **(males 32,264, females42,932)**

Age in years:	Males	Females
Under 5-	3769	3780
5-	3747	3640
10-	4096	3804
15-	3402	4556
20-	2703	4426
25-	2357	3686
30-	2004	3030
35-	1874	2661
40-	1632	2172
45-50	1500	2223

Source: 1891 Census Report for England & Wales

Civil condition of persons aged 15 years and over, Bath 1871

Condition	Males	Females
Unmarried	6509	14306
Married	10914	11206
Widow/er	1142	4104

Source: 1871 Census Report for England & Wales

Civil condition of persons 15 years and over, Bath 1891

Registration District

Condition:	Males:	Females:
Unmarried	7894	15742
Married	11603	11902
Widow/er	1155	4064

(Unmarried under 15 years: males 11,612, females 11,224)

Urban Sanitary District

Condition:	Males:	Females:
Unmarried	5472	12423
Married	7732	7969
Widow/er	829	3174

(Unmarried under 15 years: males 7092, females 7153)

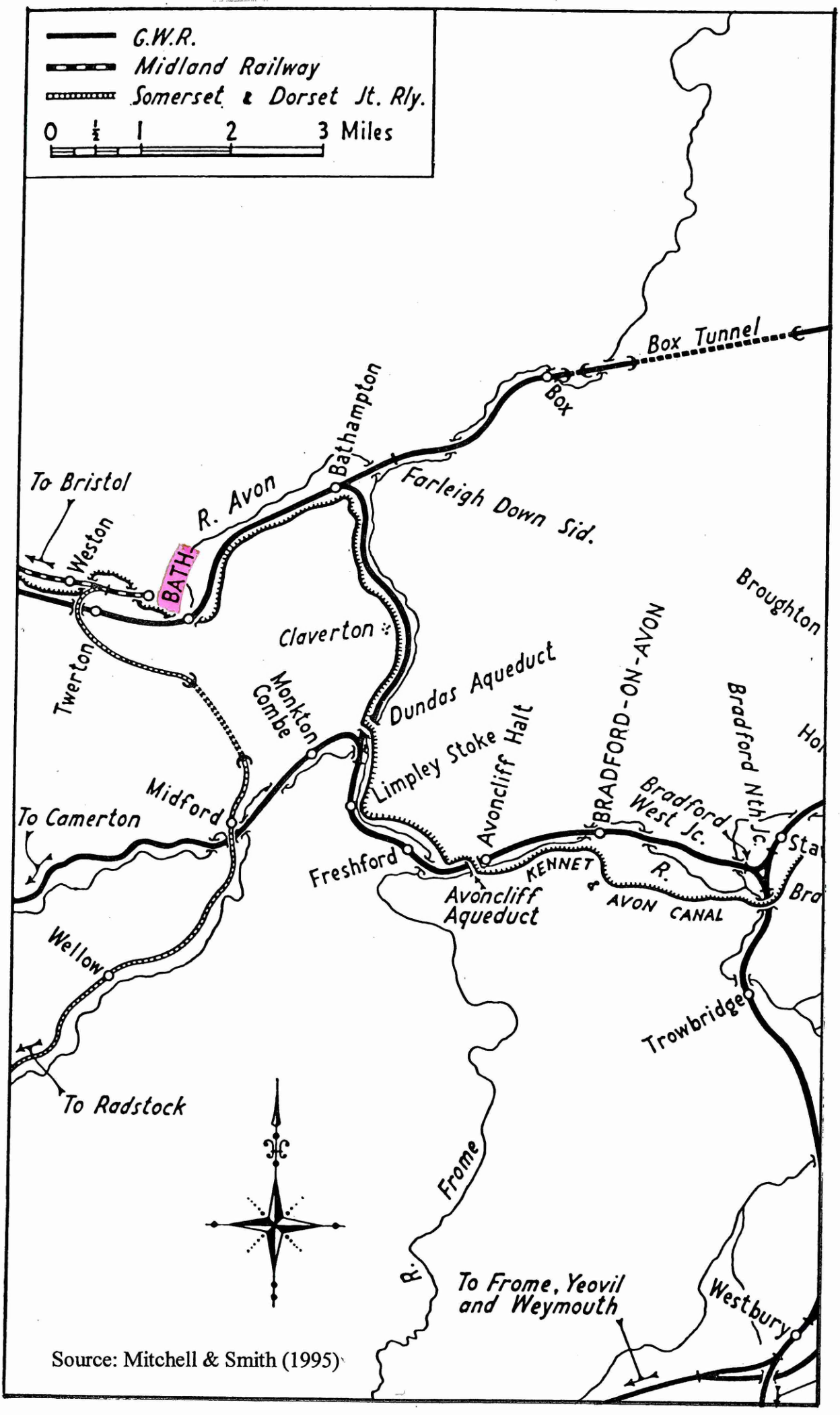
Rural Sanitary District

Condition:	Males:	Females:
Unmarried	2422	3319
Married	3871	3933
Widow/er	326	890

(Unmarried under 15 years: males 4520, females 4071)

Source: 1891 Census Report for England & Wales

Routes of Principal Railways into Bath c.1880



Source: Mitchell & Smith (1995)

Occupational Structure of Bath from the 1871 Census

Occupations of Males and Females over 20 years and upwards.

Class		Males	Females
Class I	Professional	1750	579
Class II	Domestic	1174	16984*
Class III	Commercial	1529	265
Class IV	Agricultural	1650	215
Class V	Industrial	7278	5313
Class VI	Non-productive	2145	2054

- Includes women at home

Source: 1871 Census Report for England & Wales

Occupations of Males and Females aged 10 years and over – 1891

	Males	Females
Total persons 20+	16514	26114
Class II	397	7197

Principal Female Occupations in Bath:

Milliner, dressmaker, staymaker	1716
Lodging house keeper	448
Draper	248
Shopkeeper	70

Principal Male Occupations in Bath:

Messenger/Porter	661
General Labourer	635
Mason	557
Gardener/nurseryman	545
Coachman/groom	492
Painter/glazier	484
Carpenter	456
Cabinet Maker	391
Commercial Clerk	304

Source: 1891 Census Report for England & Wales

APPENDIX 4. THE DOLEMEADS

4.a. Map showing the location of the Dolemeads c.1852

4.b. Map showing the layout of the Dolemeads c.1880

4.c. Map showing the layout of the Dolemeads c.1904

4.d. Reproduction of a postcard showing the Dolemeads in relation to Bath Spa Station

4.e. List of streets comprising the Dolemeads compiled from the Census Returns for Bath 1891 (Reel II RG12/1933)

4.f. Photograph showing houses prior to redevelopment

4.g. Photograph showing houses next to the river prior to redevelopment

4.h. Photographs of houses before and after redevelopment (MOH Report for Bath 1907)

4.i. Plan and elevation of new houses

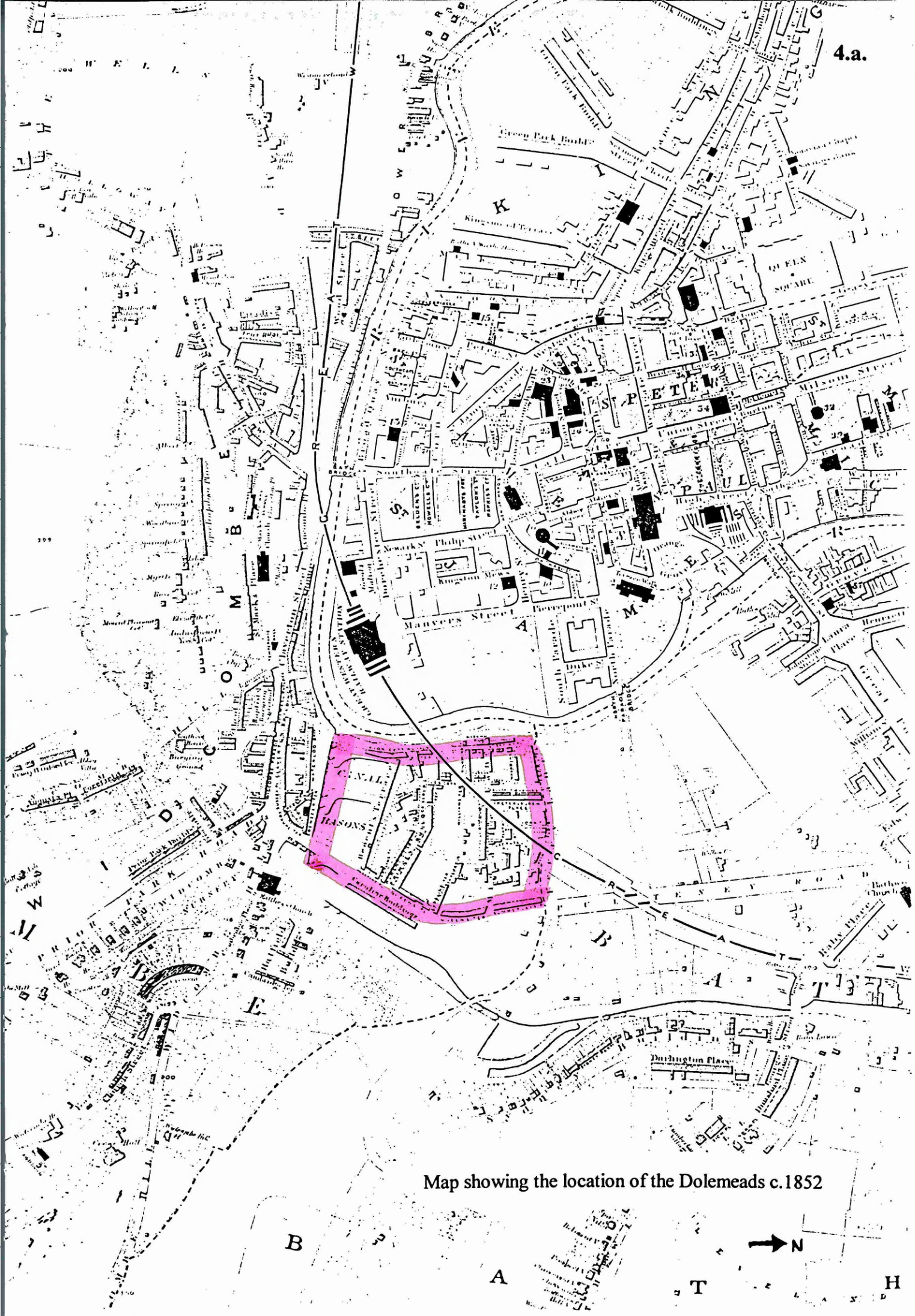
4.j. Plans and cross-sections of proposed houses in Archway Street and Middle Lane, the Dolemeads (MOH Report for Bath 1910)

4.k. Newspaper Report from the Bath Herald 25th October 1882

4.l. Newspaper Report Saturday 24th November 1894

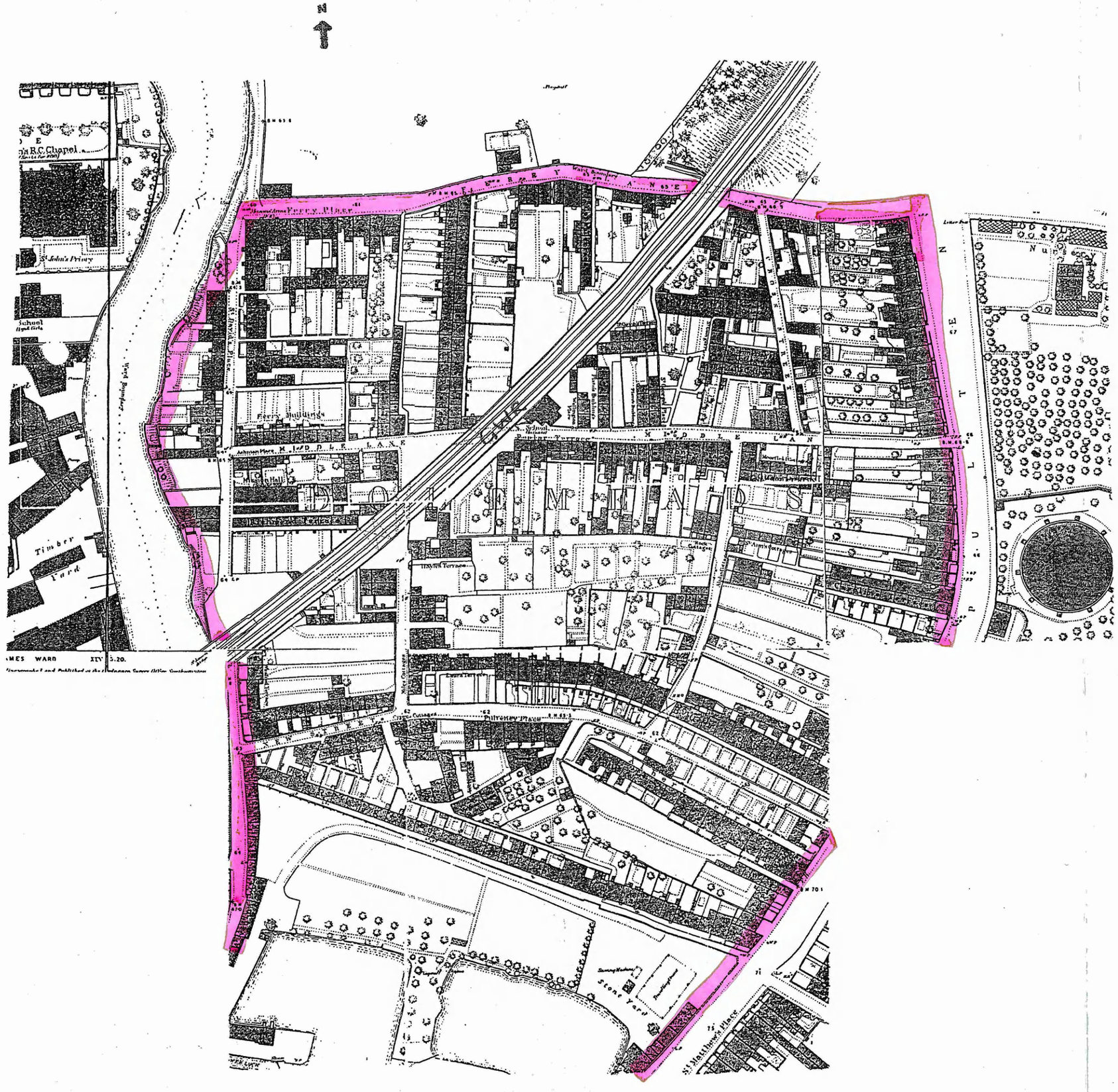
4.m. Occupations of Fathers living in the Dolemeads, listed in the Vaccination Registers for Lyncombe 1872,1892,1911

4.a.

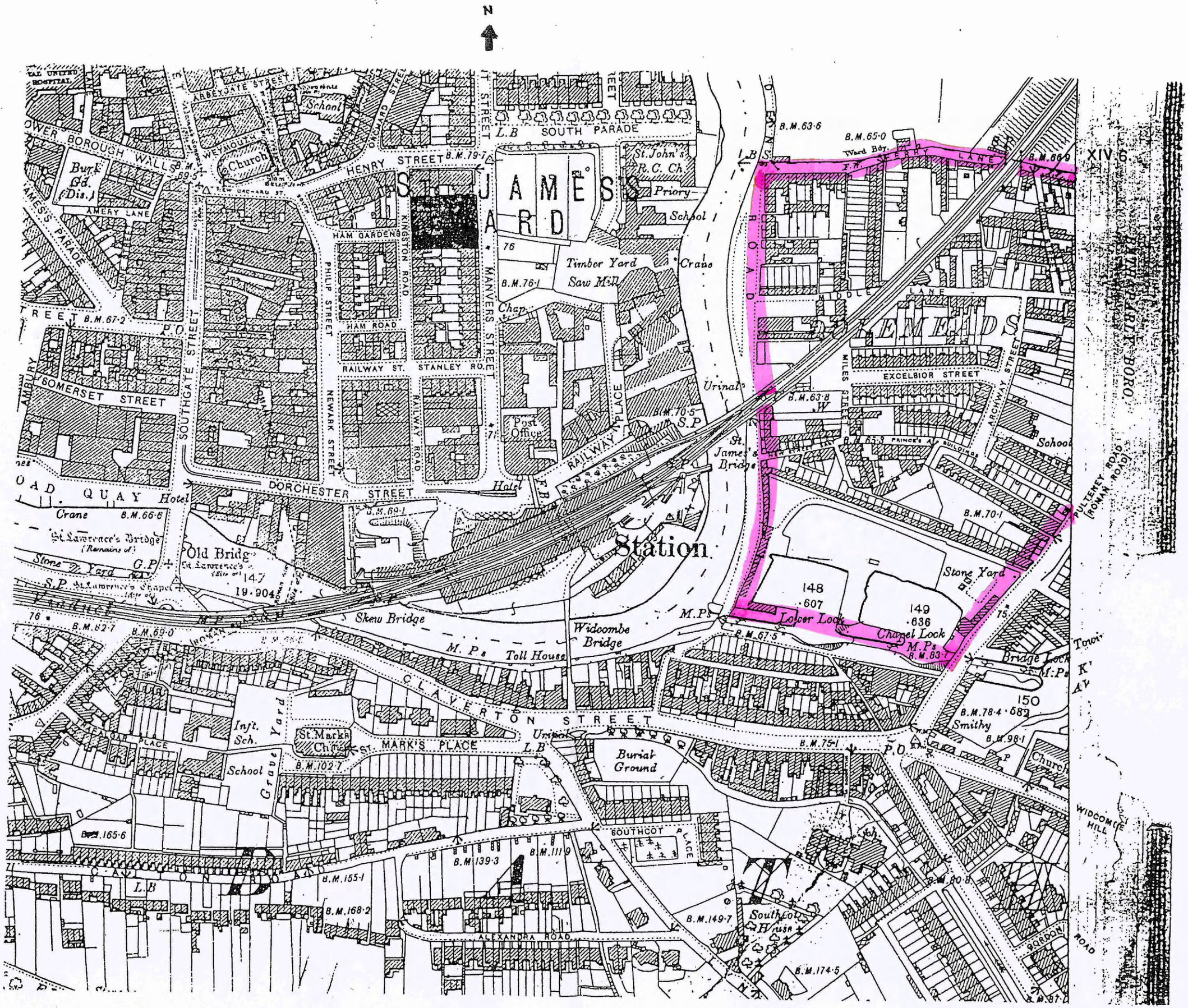


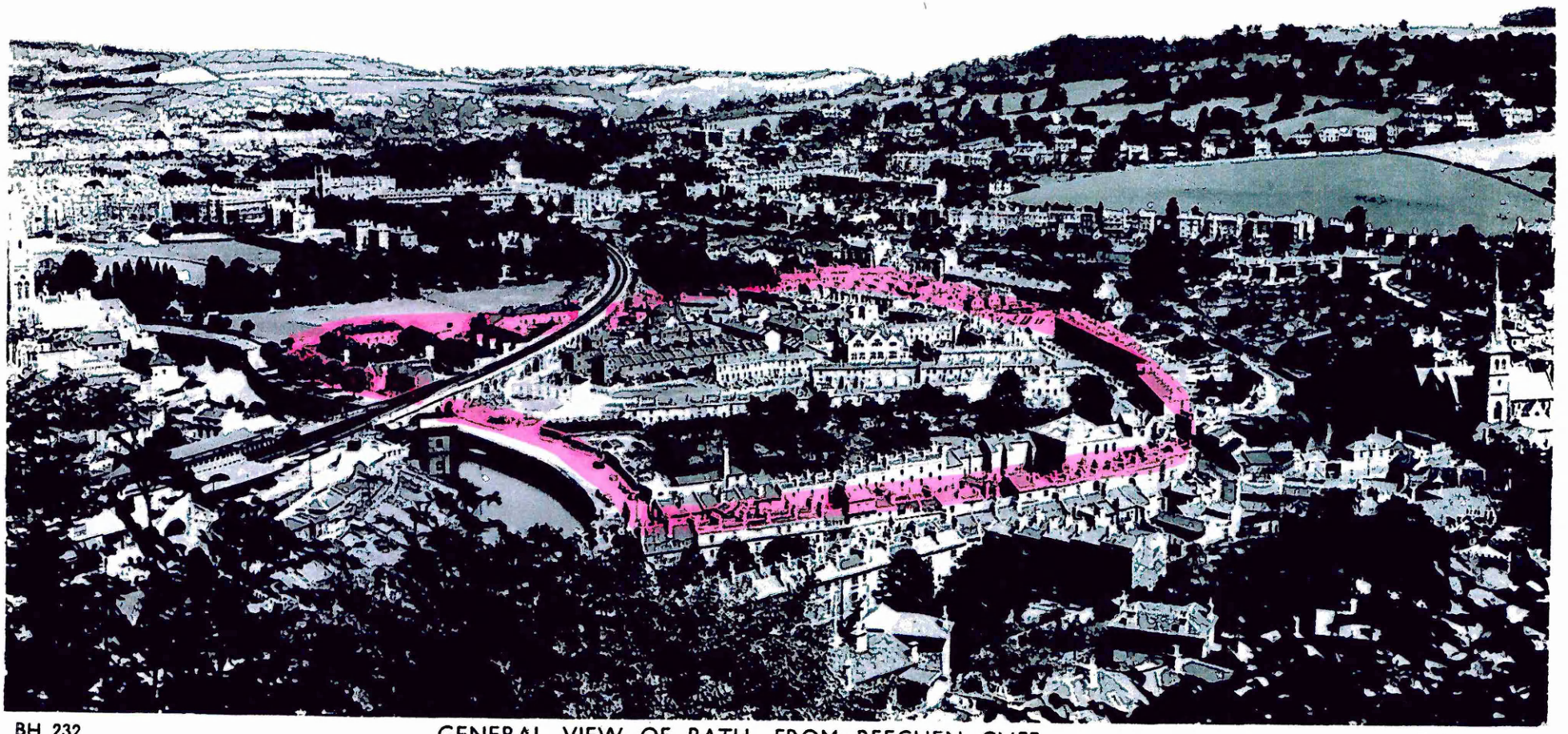
Map showing the location of the Dolemeads c.1852

Map showing the layout of the Dolemeads c.1880



Map showing the layout of the Dolemeads c.1904





Postcard showing the location of the Dolemeads, Lyncombe and Widcombe circa 1940.

List of street comprising the area known as The Dolemeads, from the Bath Census Returns – 1891 (Reel II RG12/1933)

Canal Cottages
Caroline Buildings
Gas Villa
Bartletts Nursery
Abbey View House, Terrace
Summerlay's Place and Cottages
Ferry Lane
Greenfield Place
Greenfield Buildings
Foundry Place
St George's Terrace
York Terrace
Farmer's Terrace
St.Petersburg Terrace,
Ferry Place,
Ferry Buildings
New Town Terrace
St David's Place
Arrow Place
Charles Place
Alma Cottages
Woodbine Cottages
Randall's Cottages
Dolphin Cottage
Plato's Buildings
St.George's Place
Woodbine Place
Wellington House
Bridge Place (now Lock Place)
Avon Cottages
Regent Terrace
Woodbine, Caroline Pulteney Place
Albert Terrace
New Street Cottages
Miles Cottages
Laura Terrace
Princes Buildings
Queen's Place, Terrace
Queen's Cottage
Caroline Terrace

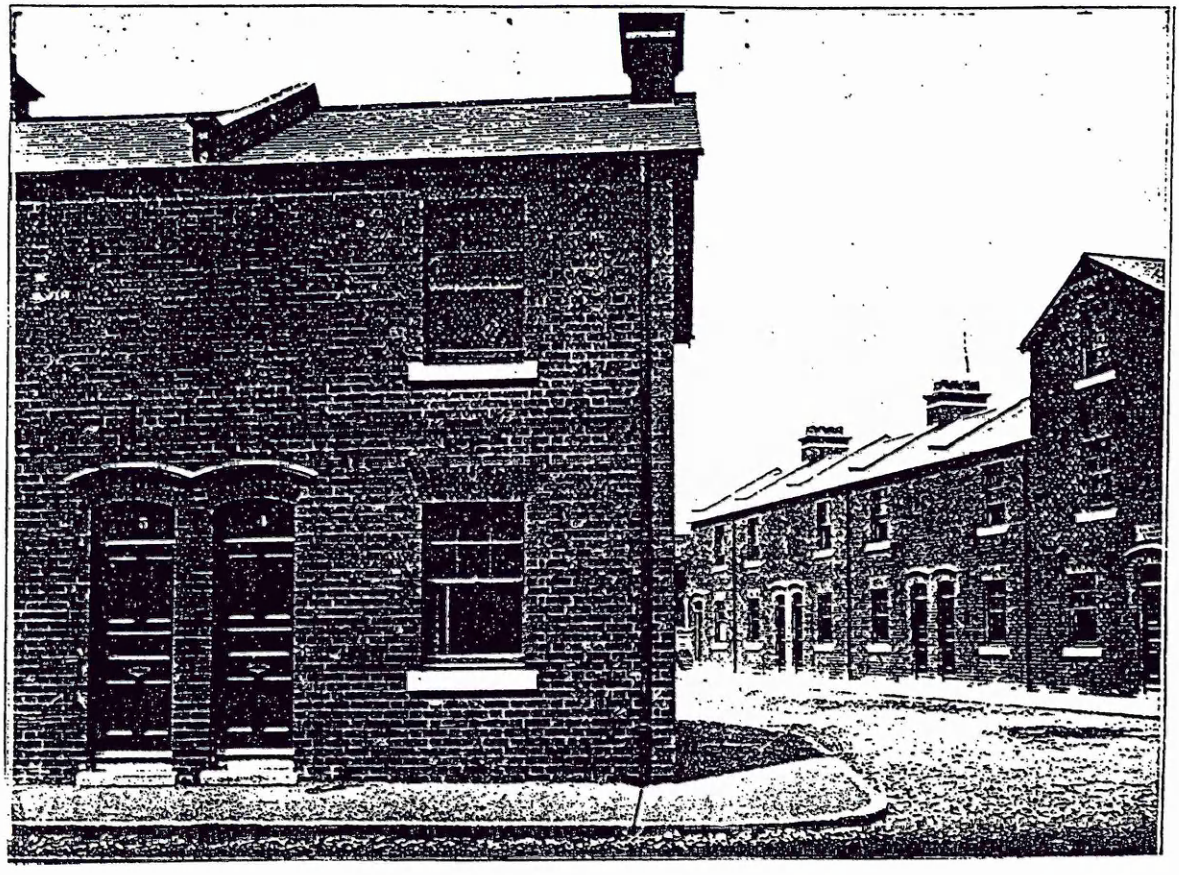
down Middle Lane & all
houses on south side, including
Queen's & Ann Cottages,
Henry & Grove Place
Moorfield Cottages
Moorfield House
Cottages at rear
Poplar Terrace
Carey's & Hope Cottages
Ashman Place
Richmond Terrace
Richmond Cottage
Hales Terrace
Flowers Cottages
Winifred's Terrace
New Street East
cottages at rear of Hancock's
new houses

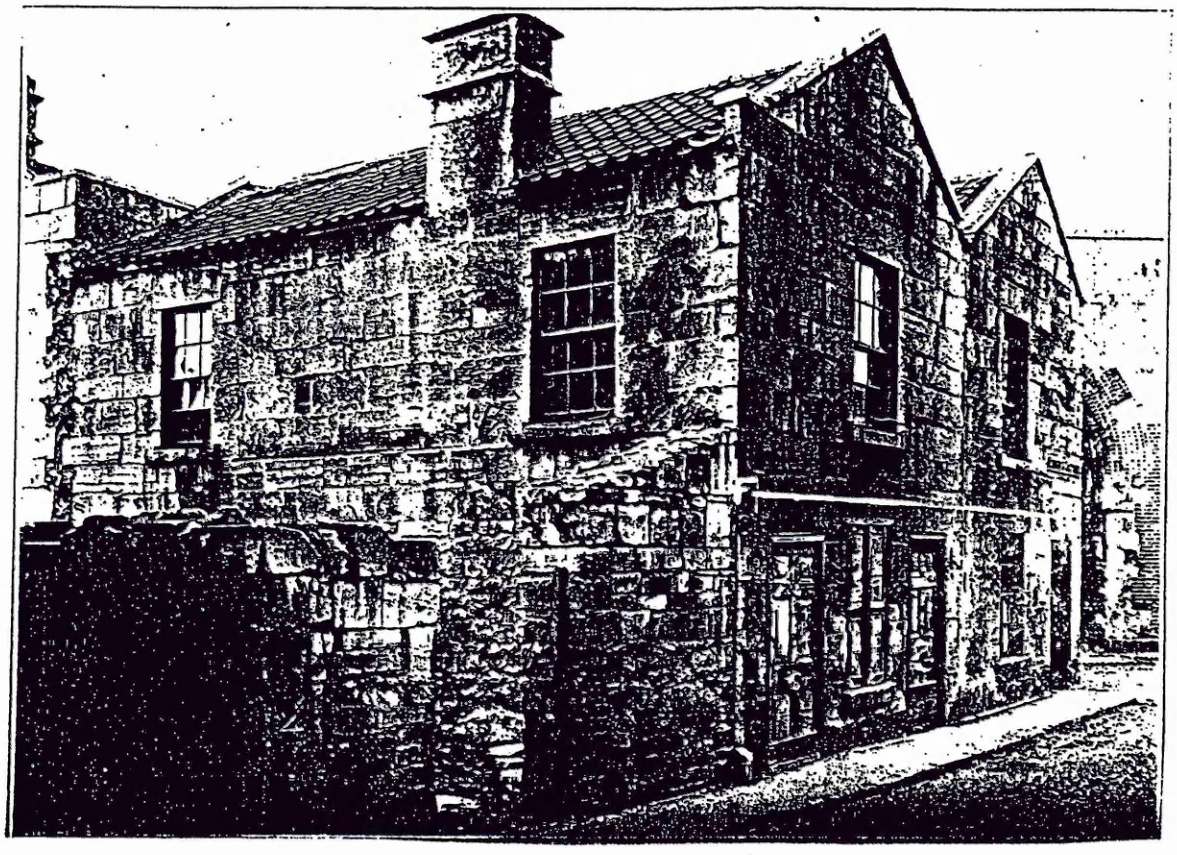
■ The Dolemeads circ. 1900.

The Dolemeads

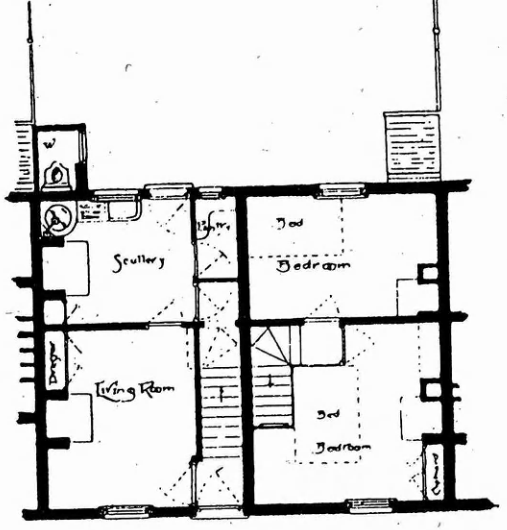
Source: Stride (1983)

New Houses c.1906

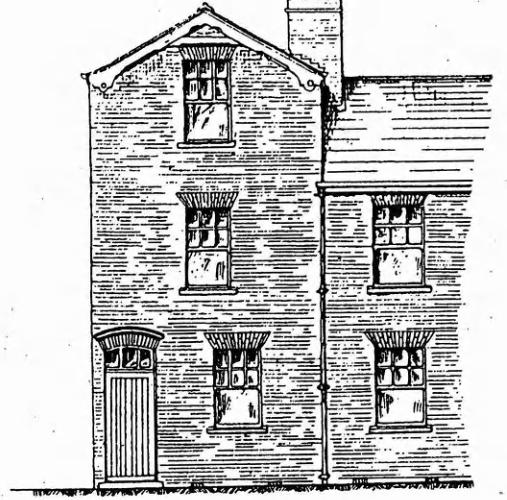




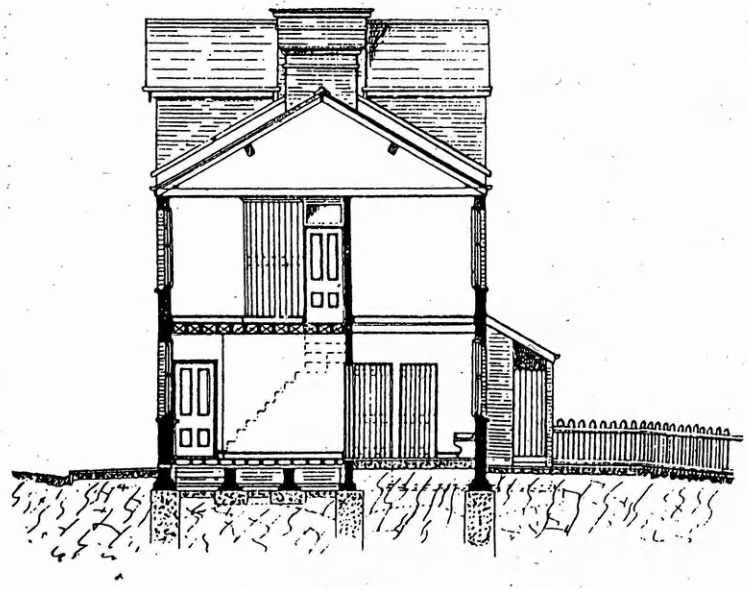
Houses prior to development c. 1889



GROUND PLAN FIRST FLOOR PLAN

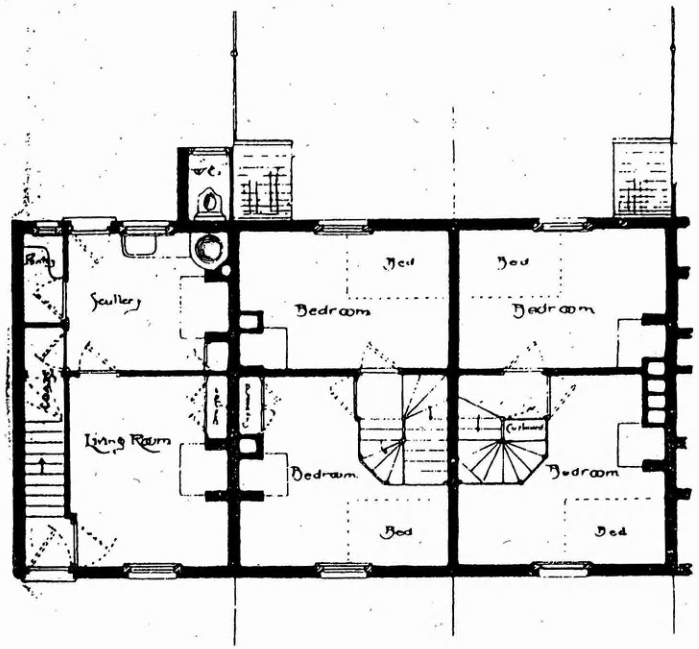


FRONT ELEVATION



CROSS SECTION

PLATE 3.



GROUND PLAN FIRST FLOOR PLAN ATTIC PLAN

PLATE 4.

Provisional Orders Confirmation (No. 4) Act 1907.
and
HOUSING OF THE WORKING CLASSES ACT, 1903 Section 3

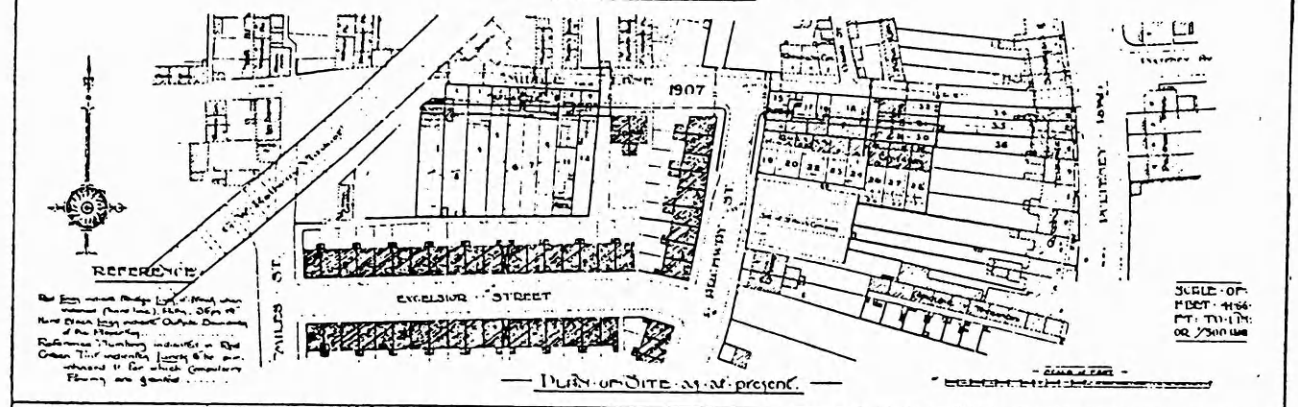
Deposited Plan

CITY OF BATH

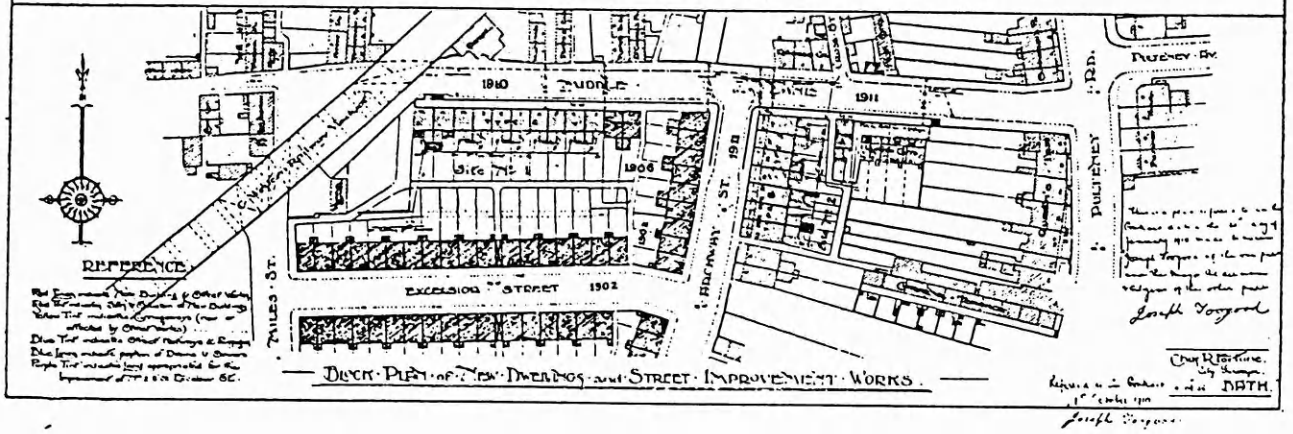
DOLEMEADS · HOUSING · & · IMPROVEMENT · SCHEME · ARCHWAY · ST. & MIDDLE · LANE.

①

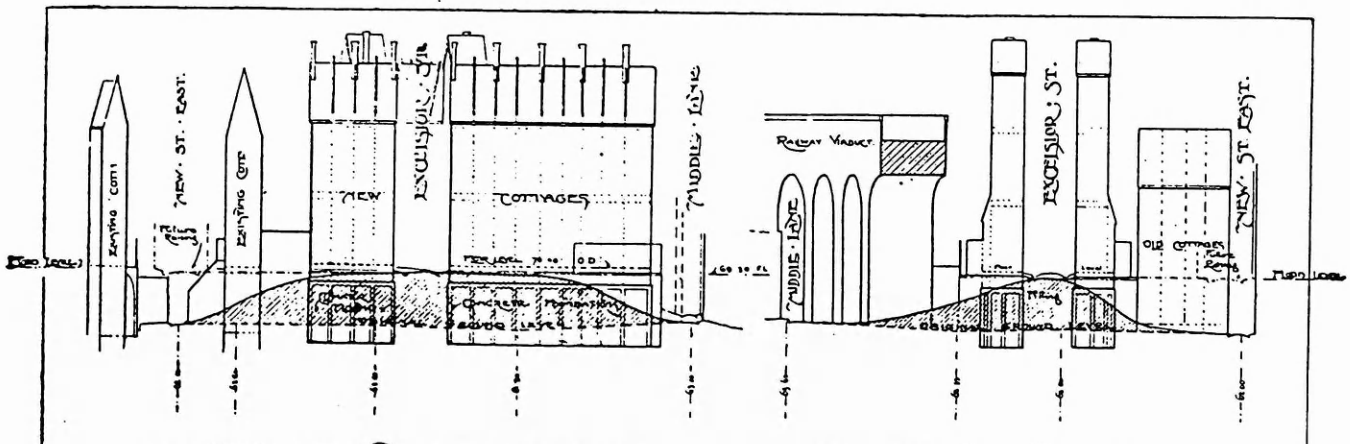
Parish of Lyncombe & Widcombe



PLAN OF SITE AS AT PRESENT.

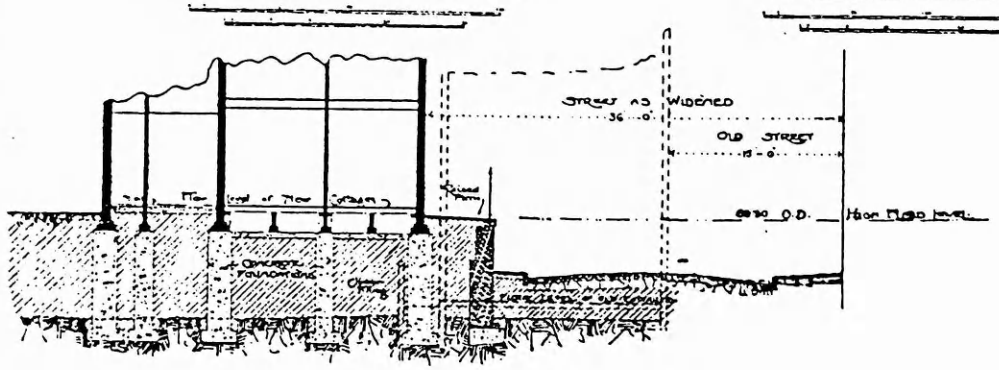


PLAN OF PROPOSED NEW DWELLINGS and STREET IMPROVEMENT WORKS.



CROSS SECTION of ARCHWAY ST.
SCALES · Horizontal · 41.66 ft = 1", Vertical · 8 ft = 1"

CROSS SECTION of MILES ST.
SCALES · Horizontal · 41.66 ft = 1", Vertical · 8 ft = 1"



CROSS SECTION of MIDDLE LANE.
SCALE · 1/67 to 1 foot.

Source: Bath Herald 25th October 1882

From the Holloway side pedestrians wishing to reach the town had to cross to Lyncombe hill and thence over the toll-bridge in the rear of the Great Western Railway station—of which the shareholders will find the benefit. There was, as we have already said, no getting through Claverton street, there being a sheet of water from the Widcombe police station onward for more than 100 yards.

Among more serious disasters recorded is the destruction of Messrs. Carr's foot-bridge at Twerton. It was carried away bodily and lies stranded near Newton bridge.

Much stock has been likewise drowned, the sufferers including Mr. Justice, butcher, of Northgate street, who has, it is said, lost 18 sheep in Henrietta park. In Back street Mr. Book, the haulier, has 17 horses in his stables which cannot be approached, and it is feared that the animals will be drowned.

Indeed the extent of the disaster will only be known when premises now flooded can be examined. The loss owing to goods and other property damaged cannot however be otherwise than excessive in the aggregate, in addition to the privation that will be caused to many families.

Crowds have been flocking throughout the morning to the various points commanding views of the inundation, and general business has been brought to a stand-still.

Owing to the floods the tram-cars could not proceed beyond S. James's Church.

PROMPT SYMPATHY AND ASSISTANCE BY OUR MEMBERS.

Looking at the suffering that will be caused to many of the poorer classes it will be desirable that no time should be lost in raising a fund for its alleviation. Our members have, we are glad to find, set an example of this promptitude. The following communication has been received from Sir Arthur and Lady Hayter, and Mr. Wodehouse, by Mr. Ricketts :—

"Very sorry to hear of the floods. We shall be "happy to assist in any movement to alleviate the "distress."

This thoughtful expression of sympathy was laid before the Mayor this morning, and his Worship will, we understand, at once take steps to start a subscription.

NARROW ESCAPE FROM DROWNING.

Gallant Rescue.

About one o'clock this morning P.S. Angell, accompanied by P.C.'s Gerry and Newman and a man named Fry, were walking along the G.W.R. line beyond Hampton row, under the impression that the Grosvenor Suspension Bridge had given way, and on nearing that spot they heard cries for help. After some little time they discovered that the cries came from the direction of Cremorne cottages, and the man Fry with a rope tied round his waist endeavoured to swim in the direction the sound appeared to come from. The force of the water however was too great to allow him to get far, but he was enabled to see that it was a man at the top of an apple tree at the back of Cremorne cottages who was calling for help. The officer then ran back along the line and, obtaining a pair of trucks, went to Maynard's boating station and placing a boat on the trucks with the assistance of P.C. Tucker and some civilians succeeded in getting it across the line and over gardens as near the spot as possible. P.C. Newman and a man named William Skivington then got into the boat to which a stout rope was tied and held by P.S. Angell P.C. Tucker and the others present. With the greatest difficulty and considerable danger they got the boat in and out of the trees in the orchard and reached the tree in which the man was, thus rescuing him from drowning. The man was then found to be George Steadworthy, a foreman at Messrs. Stothert and Pitt's ironworks, who, living at Cremorne cottages, had attempted to reach his house in order to try and save something, if possible. The boat in which he was, capsized, and he clung to the apple tree in which he was found, having, as the water rapidly rose, to get higher and higher into it. At length he found himself at the very top, with the water up to his knees, and had not assistance come just when it did he must in another quarter of an hour have been drowned. It was half-past two before he was safe in Cremorne (where every care was taken of him by Mr. Osmond), having been two hours in his perilous position. All praise is due to the police officers for their conduct in the case, since great danger was incurred from the force of the water, the spot being only between 10 or 20 yards from the river, and the water at least 20 feet deep.

THE DOLEMEADS.

The whole of this unfortunate neighbourhood is under water, and the scene is one of destruction. A view from the North-parade bridge will enable one to form some estimate of the state of the locality. The water has reached the arches of the bridge, and a gurgling torrent rushes past, above which can be seen nothing but the heads of lamp-posts and the treetops. The flood broadens over the entire surface of the Association Cricket Ground, extending out beyond to the Pulteney road.

The houses in the Dolemeads, standing on a low level, are enveloped, and the unfortunate inmates are detained close prisoners, the water rising even to the bedrooms. Boats are being used to remove families, and it is said that during the morning several rescues have been made by removing portions of the roofing.

On the Widcombe side of the Dolemeads the water has risen to the foot of the canal bridge, thus covering the main road, and people are being erried across to Caroline buildings from the houses opposite. Food also is being provided and supplied by the same means, the raft making constant journeys to and fro.

The crowds are large, and the spectators, to whom the scene is novel, view with no small amount of interest the straits of their unfortunate neighbours. It is of course too soon to hazard any estimate of the damage which the poor residents in the Dolemeads will suffer. They are not strangers to visitations of this kind, but all previous ones within living memory are incomparable with this. The condition which their dwellings will furnish when the flood shall have subsided will be pitiable in the extreme ; in fact it is not too much to say that in the majority of cases their all will be lost. Many of the people after being rescued have been brought across to the Great Western Railway Station, and they have been supplied with food in one of the waiting rooms. The charitable help thus afforded is doubtless much appreciated, for a great many of the poor inhabitants of this locality found themselves imprisoned in their homes without food for themselves and families.

CLAVERTON STREET.

This street is in a pitiable state. The towing path bordering the river at the rear is covered by many feet of water, and the back kitchens of many of the houses are entirely submerged, so that the occupants are prevented entering them. The damage which is thus occasioned may be easily imagined. From No. 25, occupied by Mr. J. Robbins, grocer, to the railway arch is a waste of water, and this has risen to such a height as to very nearly submerge the whole of the wall opposite Lyncombe place. Ingress or egress is here equally impossible, and this morning was witnessed the extraordinary spectacle of a butcher's man riding on horse-back with the water reaching to his knees.

cillors Cox, Rubie, Sturges, Turner, Hancock, Wilton, Thornley, Archard, Oliver, Moger, Reynolds, Bladwell; Revs. Canon Brooke, J. Dunn, W. T. H. Wilson; Major Davis, Colonel Gwyn; Messrs. F. King, Chivers, W. Tuck, T. W. Silcock, E. B. Titley, R. E. Peach, J. Chivers, Newton Fuller, J. Stone (town clerk), J. Colmer, S. Francis, E Hill, J. Dyke, Montagu, F. H. Moger, Stiles, &c. The Mayor thanked those present for attending in such numbers at so short a notice, and acknowledged the Christian kindly part taken by Mr. E. B Titley, who with other gentlemen had been feeding the children of the poor at the Great Western Railway Station. He was exceedingly pleased to recognise Mr. Titley's active help. His Worship also alluded to the admirable services rendered by the Chief of Police (Col. Gwyn) and Superintendent Berry. A discussion took place as to the best method of sending food to the distressed, and a number of gentlemen were instantly told off to the several districts. The Rev. W. T. H. Wilson stated that he could provide accommodation for a week for 200 people from the Dolemeads, and reported that food had been distributed during the day. Mr. Colmer offered accommodation at the Old Crown Inn, at present empty, and if needed it was stated that other accommodation could be offered.

THE POLICE.

The city police under the direction of Colonel Gwyn and Superintendent Berry, have been unremitting in their efforts to assist the sufferers, and have offered the most valuable help.

AN EXCITING INCIDENT.

An exciting scene was witnessed this afternoon on the Quay side, near the Old bridge. A stick was thrown into the water, after which a spaniel and a retriever swam. The dogs were being rapidly carried away by the force of the current, when a young man named Hawkins courageously plunged in and brought them to land. A subscription to the rescuer was made on the spot.

BATHEASTON.

At Batheaston yesterday the brook near the National Schools rose so rapidly whilst the children were at lessons, that the school was entirely surrounded by water a whole stream rushing through the front and out at the back entrance. The children were supplied with food by one or two who volunteered to face the water, and after several hours' imprisonment they were rescued by means of a temporary bridge. Several of the inhabitants having the water in their cellars, they can neither get coal, wood, water, nor even the gas, so that they were in darkness. In some cases the people have had to take refuge in their bed rooms, which are shared by their pigs and fowls. At the Batheaston new bridge the water has just reached the crown of the arch, but the keeper at the bridge has no doubt that it will stand the great pressure which is against it. The water rose here 2ft. per hour last night. The railings the other side of the bridge are washed away for several hundred feet. At the Batheaston Mill the man who resides there is made a prisoner in his bedroom, with some 14ft. of water surrounding. The scene at this point is grand as the sun shines upon the vast amount of wa r, which reminds one of an inland sea. The brook at the bottom of Bannerdown hill has overflowed into the London road and, with the boats passing to and fro, it is like a street in Venice. At Bathford the bridge over the Box brook is reported to have fallen, and communication with that part has been entirely suspended since six o'clock last evening. The paper mills and flour mills in the neighbourhood are stopped. Hayricks, tops of trees and hedges are in places just visible above the water.

SCENES IN THE DOLEMEADS.

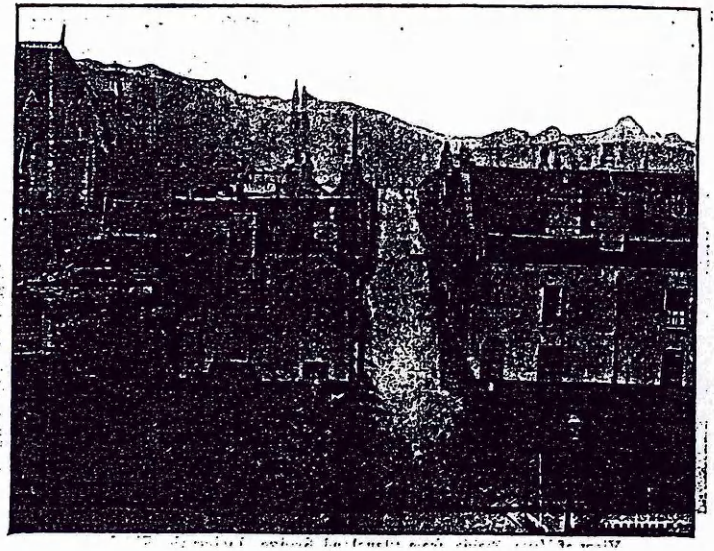
The North-parade bridge commands a very extensive view, and from this standpoint a very great abatement of the flood was this morning apparent. The water in Institution gardens was much lower. The hedgerow from Pulteney bridge was at length visible, as was also some portion of the bank leading to S. David's place, Dolemeads. The water had fallen below the level of North-parade road, and pedestrians found no difficulty in passing along the Pulteney road (which yesterday was completely submerged) and on to Widcombe. The condition of the inhabitants in the Dolemeads is such as should excite feelings of commiseration, for a sadder scene of havoc than that witnessed this morning could scarcely be conceived. A few of the most noticeable instances of loss may for the present suffice to give our readers some definite idea of the prevailing misery. In Middle lane the suffering of the inhabitants has been great. This place was under water as early as nine o'clock on Tuesday night, and the flood rapidly rose until it had reached a height of over five feet in Alma cottages. This morning the unfortunate occupants were showing visitors the interior of their dwellings. Everything which water could permeate was soddened. Articles of furniture had floated as high as the mantelshelf and were lying broken in many pieces and useless; pictures and the frames which held them had parted, and little ornaments which had been swept from their places by the whirlpool were lying shattered, while here and there were tables piled with all kinds of garments dripping wet. Despite these wretched conditions the people appeared cheerful, and were labouring hard to clear their dwellings of the mud and filth which had been washed into them—a Herculean task in truth. Outside Moorfield houses, where the flood had reached the wash-house roofs, furniture was piled as though for a general exodus, and children's faces still peered from the windows of upper rooms in which they were confined, for boots and shoes were found scarcely fit coverings for their feet after 24 hours' saturating. There were to be seen one or two sufferers who, leaving their houses in Ann's buildings on Tuesday night before high flood, had afterwards found it impossible to return. One of these was an elderly woman who leaving her five children in the care of her husband, went to the aid of a friend needing her help, and to her deep distress found shortly afterwards that she was unable to re-enter her dwelling. After wandering about until half-past eleven o'clock at night she was charitably cared for by Mrs. Barter who keeps a neighbouring public-house. In an equally distressed condition to those already referred to were the houses in Bladud's buildings and in Poplar terrace, the people not having been able to re-enter the apartments on the ground-floor owing to their still remaining flooded. In Wellington place a similar state of things existed, and one unfortunate occupant complained that the door of his house had been washed away. In one of the houses in Poplar terrace (to which all access is barred owing to the kitchen below the level of the roadway still retaining the water) provisions were being hauled up in a basket to the bedroom window, the woman who received them informing inquirers below that she and her family had been shut up ever since Tuesday night, and that during Wednesday their wants had been supplied by the boats. The railings dividing the gardens opposite Foundry house, as well as the boundary wall, had been washed down and the wreck remained to be cleared. In Cross lane the water was three feet deep, and Woodbine place was found to be another block of buildings still suffering from the visitation. No. 6, S. David's place, a small dealer's shop kept by Geo. Rose, an elderly man, was a scene of utter destruction. All his groceries,

surrounded, and the occupants had to keep to the upper rooms, after removing as many of their belongings as was possible. The water was within a few inches of entering St Peter's Church. The Twerton Co-operative Stores would have been inundated, but for the presence of one of the Committee, Mr. J. Collier, who obtained a wide plank and fixed it at the door, stopping the crevices with putty; this bayed back the flood which rose eight inches above the level of the shop. Further on in the parish of Twerton the houses lying near the river were badly flooded.

A scene of desolation surrounds the Victoria bridge, though the water has considerably subsided all around. Percy-terrace is now approachable though there is water under the railway arch. The asphalte paving at the side is broken up and the metal on the roads is laid perfectly bare. As evidence of the force of the flood, it may be mentioned that a number of gates have been torn off and was raised. The bridge might be considerably damaged and also the approaches, but the structure was in position. This could be seen from the position of the iron rods between the pillars at either end which were visible above the flood. Had the current been so swift at this point as it is at the Old Bridge, the structure undoubtedly would have succumbed, but at Grosvenor the water is not so confined. The bridge house and other dwellings near it were submerged to the top of the ground floor rooms and the notice board on the bridge house was visible. The

KENSINGTON MEADOWS

were quite a sea and the greenhouses and the house occupied by Mr. Webb in the rear of Kensington were in a pitiful condition; about half the window of the drawing-room could be discerned.



Street and Scene in the Dolemeads.

railings twisted and broken down. A huge pile of *debris*, gates, wood, and what appears to be a broken boat, is caught in the middle piles of the bridge over the Avon, over which the Midland Railway passes, and there is a large barge loaded with refuse aground on the towing path near the Victoria bridge. If the water rises and floats the barge it will make a formidable ram for any object lower down the river. In Brassmill-lane a man who had a fowl house there found all the inmates drowned, while the tenant at Ferry-house, in a field near the bridge at Weston, was shut off from all communication with mankind the whole day, and was obliged to inhabit the rooms on the top storey. He owns about 80 fowls, and he got nearly 40 of them in on Monday night, and these were on Tuesday sharing with his family the occupation of the house. The traffic on the Weston Suspension bridge was not so brisk as that on Widcombe Bridge, as those people who have ventured across the Weston Bridge had to go step by step along the rails.

THE DOLEMEADS

were again receiving attention yesterday. Although the receding of the water had rendered it possible to reach on foot many of the houses yesterday completely surrounded a large number are still under water and this afternoon the water began to rise again. The parochial clergy, Messrs. Russell Duckworth, Roadhouse, H. T. Hitt, J. Obirnside, S. Giles, and other volunteers were again at work early this morning preparing provisions for the inhabitants and distributing them. It was another instance of "Water, water everywhere, and not a drop to drink," for the taps were submerged and unapproachable. Tea and milk have been taken round together with bread, cheese and corned beef. Many families are still accommodated in the Widcombe Schools and they are likely to be compelled to remain there for some time. They are well cared for and last night were provided with blankets lent by Mr. Roadhouse, Mr. Colmer and others. Mr. Titley has given a large quantity of corned beef, Mr. Giles 100 quartorns of bread, and Mr. Spear a large cheese. Tea and coffee are being served in the Mission Hall.

VILLA FIELDS.

Returning along the London-road we drove over the Cleveland-bridge, from which a large stretch of the flood could be witnessed. This showed that the houses affected on Tuesday were in a much worse state and the caretaker's house at the Boating Company's station we heard was completely surrounded, though the boats were all secure

HENRIETTA-PARK AND GROVE-STREET

were again submerged and also that portion of Bathwick lying on the same level, including St. John's-road, Henrietta-villas, the greater portion of Grove-street and the end of Henrietta-street. In Grove-street the residents were warned yesterday to take to their upper rooms and to remove all damagable goods with them. This they did. In some instances it was thought advisable to remove the people to places of safety, and a number are living for the present at St. Mary's Church House, and in the upper floors of the parochial schools, which, with the Victoria Infant School, are surrounded by the flood. Henrietta Mews and Pulteney Mews were inundated, and Mr. Ames had removed his horses to the Circus, while various vehicles were placed by the side of the Edward-street slip. Driving to Hampton-view we gained

THE CANAL BANK,

and from this raised ground one of the best views of the flood could be obtained; the eye was able to travel far up the Avon Valley, the water being half-a-mile across in many parts. The road below the Cremorne-gardens was blocked before the railway arch was reached, and the houses farther on the road completely isolated. Reaching the city by

PULTENEY STREET

it was curious to note the crowds of people watching the expanse of water from William-street and Johnston-street, the flood in the Pulteney Meadows and beyond resembling the sea, and the water sparkling in the sun

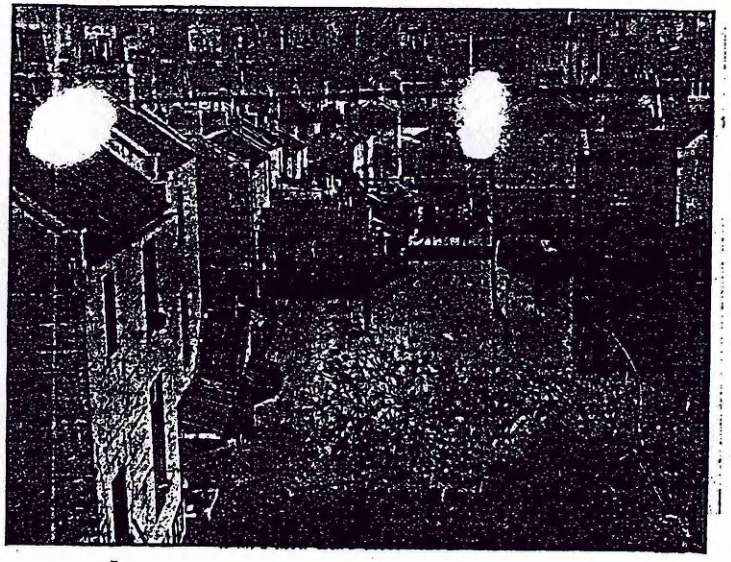
in boats and this is also the case at the bottom of Peter-street.

SOUTHGATE-STREET

was a canal its entire length; from St. James's Church to the Old Bridge nothing but water could be seen and boats were plying up and down landing the passengers in Dorchester-street at one end and in the Lower Borough-walls at the other.

NEWARK STREET AND MANVERS STREET

had the water up to the top of the areas, and in Ham Gardens the flood had entered the dwelling rooms. In Manvers-street the new Post-Office sorting office has water up to the ceiling of the basement and the gardens opposite the Catholic Church have water in them to the depth of 3 ft. The basements in the Parades of Pierrepont-street have also suffered.



Street and Scene in the Dolemeads.

WIDCOMBE FOOT BRIDGE.

As water stretches from Claverton-street far into Twerton, the only way from the city to Lyncombe and Widcombe and Twerton is by means of the above bridge. It was a heavy drain on working men to pay the halfpenny toll, and to-day it has been thrown open free, the action having been taken by the Directors. It is a boon greatly appreciated.

THE DOLEMEADS.

RESCUE AND RELIEF OF THE HOMELESS.

THE NATIONAL SCHOOLS TURNED INTO A BOARDING HOUSE.

The task of housing and feeding hundreds of homeless people from the Dolemeads has been carried out in a most thorough and efficient manner, the parochial clergy taking a prominent part in the work of relief. Ever since Monday night a certain number from the most affected houses in the Dolemeads have been accommodated at the Widcombe Schools in Millbrook-place, but last night the number was greatly augmented, the work of rescuing the women and children having commenced early yesterday evening. It was effected by means of boats, Mr. Russell Duckworth and his son taking an active share in getting the unfortunate folk out of their homes. Many of them showed the greatest reluctance, and it was with the greatest difficulty that they could be prevailed upon to leave the cottages, around which the water was fast rising. This rendered the work of the rescue parties extremely difficult and under the circumstances more dangerous, as the current in some of the lanes was exceedingly strong. The ordinary approaches to many of the houses were completely blocked up, and the able-bodied inmates were taken down by ladders. Young children and babies were lowered in sheets and blankets. The work of the boats, valuable as it was,

spoil heap about a hundred yards above the Gas Works broke from its moorings, and floated down the stream with such velocity that its prow came in contact with a large two-foot main running beneath the Gas Works bridge over the river and completely smashed it, a length of the pipe being carried away. The barge, however, went underneath the structure and was carried out of sight, subsequently lodging in the neighbourhood of Messrs. Carr's cloth factory. This was followed by another barge which got clear of the bridge and no damage resulted. But a third barge which came down between eleven and twelve caught the supports of the bridge in the middle of the river and then lodged. Desperate efforts were made to dislodge it, the officials fearing that the great pressure against the supports of the bridge would bring down the whole structure. Every man on the works was called to the spot—even the clerks from the office being summoned to the rescue—and a hawser being attached to the stern of the boat endeavour was made to haul the barge away, but when our representative left the scene all attempts were unsuccessful. As a last resort a man was to be let down by a rope over the bridge with the object of scuttling the barge. The breaking of the pipe already referred to is of more consequence than at first sight appears, because it connects the large reservoir on the river side with the retorts. Everything was in readiness to make good the damage when the water had subsided sufficiently to allow the men to approach it.

FRIDAY.

The subsidence of the waters which began yesterday afternoon has gone on uninterruptedly, and streets which yesterday were covered with water have resumed their normal condition plus

AT THE ELECTRIC LIGHT WORKS.

When darkness set in yesterday evening it was a general source of surprise to notice that the electric lights in the city shone out with their accustomed brilliancy. The notice issued by the Mayor early in the day warned the citizens that no gas or electric light would be available and it was satisfactory to find that the prediction as regards the latter, illuminant was not verified; not only were the large arc lamps in working order but the incandescent lights were effective except in some establishments where the water had reached the transformers.

OUR VIEWS.

The above Illustrations are from Photographs taken xpresaly for the Proprietor by Mr. Davis, Gay Street. Their reproduction is not permitted.

GREAT FLOOD IN BATH.

WHOLE DISTRICTS SUBMERGED.

HOUSES FLOODED.

SCORES OF FAMILIES HOMELESS.

GREAT DISTRESS.

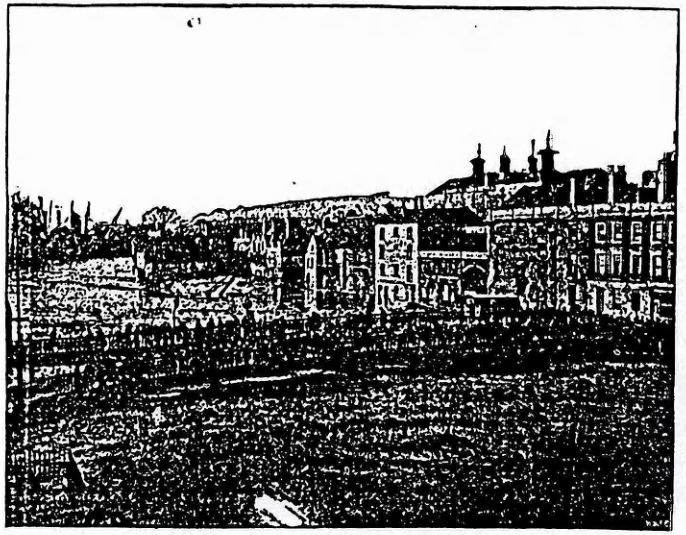
The overflow of the river which has caused such widespread destruction, driven people from their homes, put a stop to business in a great part of the city, and brought misery and distress upon many a household, to be followed in due course of a surety by sickness and poverty, has only been surpassed in its disastrous effects by the great flood of 1882, while so far as we have been able to ascertain its maximum height has only been eight inches below it. Prepared as people were in some measure for the enemy, which did indeed come in like a flood, the suddenness of the uprising found people unprepared, and, as may be expected, much loss and discomfort have been suffered which otherwise might have been avoided.

THE DOLEMEADS ON MONDAY NIGHT.

A *Chronicle* reporter visited the Dolemeads at a late hour on Monday night, or rather early next morning, and was amazed at the suddenness and rapidity with which the flood was rising. At four in the afternoon the Association Cricket Ground and the adjoining new Recreation Ground were above water, save a large puddle in the middle of each. A few hours later each field was several feet deep in a seething, swirling mass of water, which was still rising. In the Dolemeads the residents near the river had wisely prepared for the worst, and the furniture in most cases had been moved to upper storeys, so that beyond the wetting and the mud which would be brought in no great damage could be done. In many cases, however, no preparation had been made, and the unfortunate people, whose goods and chattels were floating, were standing at the edge of the flood bewailing their losses. Some interesting and at times amusing incidents were witnessed, amusing if the distress which must inevitably ensue could be forgotten. However, the Dolemeads people took it in very good part, laughing as the oncoming flood made them retreat still further back. When two older members of a family emerged from the flood with two younger members in their arms, still asleep, they were given an encouraging cheer, and some amusement was caused to a small group of watchers when a fireman, who had donned his boots, coolly walked through the water to a distance where it was somewhat deep, with a jug in his hand. He barracks were unapproachable, and the constables who had to come on duty in the morning waded through the water carrying boots and socks in their hands.

In Henrietta-street water had flooded the kitchens from Nos. 11 and 26 downwards, and in the houses lying lowest the kitchen furniture could be seen floating about. The pedestrian was stopped at the end of the street for from this point almost to Bathwick-street the road was submerged to the depth of several feet and a horse drawing a butcher's cart had difficulty in making its way through the flood. An idea of the height of the water can be gained from the fact that it was only three feet from the cross-bar of the goal posts in the park. The park was a deep lake which extends up to the rear of houses in Pulteney-street. In Henrietta-villas the residents have suffered severely, the water having complete possession of the kitchens. In St. John's-road a family named Tucker were imprisoned in the upper floor of their cottage, and kind neighbours were contriving to supply them with a little food and a drop of something comforting in a bottle, which was placed in a tub and guided to the window. The underground kitchens at the bottom of Bathwick-street had several feet of water in them.

The sight from the end of Johnstone-street on Tuesday morning was so unusual that it was worth while witnessing. From this point of view a huge expanse of water met the eye, the Pulteney-meadows being totally flooded. Of the pavilion used by the Grammar School boys only the roof was visible, while the large grand-stand recently erected by the Company on the football ground had been lifted up and thrown bodily in its back. The crossbar of the goal posts could be distinguished, and there was evidently six or seven feet of water in the centre of the field. How the bank being constructed by the riverside, to obstruct the gaze of outsiders, has fared can only be known when the water recedes but it is expected nothing of it will remain. The torrent was rushing under the North Parade-bridge at a fearful rate and only a small part of the arches of the structure remained out of the flood.



The Flood at the Old Bridge.

In the Villa-fields the damage is not so great as might be imagined, but the water had swamped two or three dwellings near the Cleveland Bridge, and the occupants are being accommodated by their neighbours. The men employed at the Boating Company's Station had a busy and anxious night in securing the boats, but fortunately none drifted away. The caretaker had had two or three applications for craft to be employed in rescue work. One boat was taken by the road to Bathampton, where the miller who lives at Bathampton flour mill, on the weirs, was in a position of great danger. He was hemmed in with his family in an upper room, but with much trouble and considerable risk, owing to the rapid current, they were got to dry ground.

From the railway bridge at Hampton-row a perfect sea met the gaze, and the course of the river could be traced only by the tops of the pollard trees growing on its banks. The Kensington Grosvenor, and Lambridge meadows were completely submerged, and at Kensington the water was in the basements. The Grosvenor suspension bridge was under water, above which the iron will be done to the city steam roller by the flood. It was left in Middle-lane, where it was at work on Tuesday, and to-day was quite under water, the funnel being visible. From the convent to St. Matthew's-place the Pulteney-road is inundated, and the inhabitants here are suffering almost as badly as anyone by the flood.

All approach to the Old Bridge was cut off, and only the crown of the structure was above the flood. From Mr. Blatchford's shop to the bridge Southgate-street was like a river, and quite impassable, and the water was in numerous shops, while of course the cellars were filled. The traders removed most of their stock which was underground to places of safety, but great damage must be occasioned. The flood washed up the wood paving recently laid down, and the blocks were floating about like drift wood on the sea beach.

The cellars and kitchens in Newark-street, Philipstreet, and Manvers-street have been visited, and the Manvers-street Chapel schoolroom is under water. Mr. White, butcher, of Stall-street, had much difficulty in saving two Devon oxen from his slaughter house in Backstreet, but they were removed when breast high in the flood to higher ground.

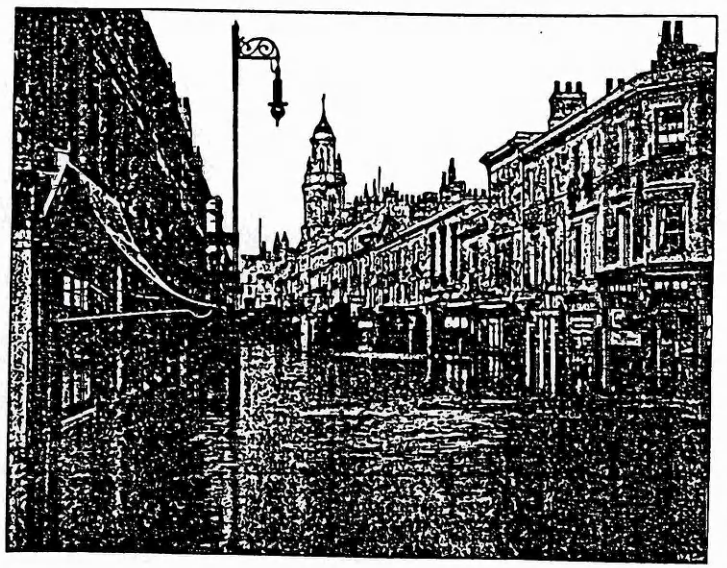
The Roman bath was filled to a considerable height with flood water, and the new reclining and douche baths, in the basement were submerged, and the attendants early on Tuesday had much trouble in bringing a number of valuable sofas, chairs, etc., out of danger.

In Dorchester-street the flood met the water in Southgate-street, but the Electric Light Works were not under water.

In Newmarket-row, at the Widcombe toll bridge, which has done a roaring trade, and other points of vantage hundreds of people watched the rush of the water.

CORN-STREET TO THE GAS WORKS.

The rising ground at the end of St. James's-parade allowed one to take a view of the flood running from Southgate-street into Corn-street, and from the Asbury right down to the end of Corn-street, where the Jews' Synagogue stands, which was all under water. On the



The Flood in Southgate Street.

Southgate-street side there were floating about of the Corporation wooden blocks used for paving; Bolwell's and Brimble's-court were inundated, the tenants here as elsewhere having to seek shelter in the upper rooms, unable to get out; while the water came sweeping round the Asbury corner and down the other end of Corn-street like a river. Some men were struggling "up stream" in a boat, their intentions being to save a bullock in a slaughter house near at hand. Earlier in the morning seven horses and a donkey, belonging to Mr. Charles Book, and a bullock, the property of Mr. White, had been rescued by four men named Hennessey, J. Moody, Fowler, and J. Phillips. The water was only at the foot of Peter-street in the road, but the basement of the house were of course completely flooded. On Monday night in Avon-street about ten feet of the street was covered, but it rose so rapidly that during the night it had reached the Artizans' Dwellings. The inhabitants was followed all over the flooded area. It was curious to see the windows filled by anxious watchers, some sitting on the window sills in order to take a wider view of the situation. Indeed connection with the City from Twerton could only be obtained by way of Oldfield Park to Widcombe and over the bridge by the Great Western Station, as Southgate-street was impassable.

THE BRIDGES.

The great flood of this week has supplied the authorities and others with several striking object lessons. Among these is the want of a free bridge as a companion of the Old Bridge. The inhabitants on the south side would have been entirely cut off from the city had it had not been for the existence of the toll bridge at the rear of the Great Western Railway Station. Bristol-road, Pulteney-road and Southgate-street were all impassable. The result was that nearly all in Lyncombe and Widcombe having business in the city had to cross the foot bridge—the proprietors of which reaped, as on the like occasion in 1882, a rich harvest from what was to many a dire calamity. Looking at the great increase in the population of the suburban ward, it ought not to be dependent on one free inlet alone for obtaining ingress to the city when extraordinary floods occur.

WEDNESDAY.

Fortunately the severe flood of on Tuesday abated during the night and yesterday morning the water had gone down a ft., but we fear it is only a temporary subsidence, as during Tuesday night three-quarters of an inch of rain fell in the city and district, and to-day it was pouring heavily and incessantly. Telegrams from Calne, Chippenham and Trowbridge state that the water is rising rapidly in those districts, and probably a worse visitation than that of Tuesday is in store. Great distress and misery have already been wrought, and there is much call for the exercise of discreet benevolence. The Mayor has convened a meeting of citizens for Friday afternoon to consider the method of relief to be adopted.

The highest point of the flood was reached at three o'clock on Tuesday afternoon, the water then being within seven inches of the flood of 1882. At three the water commenced to subside, but at 4.30 the shopkeepers in Southgate-street and the neighbourhood were alarmed by a sudden rise of the water of three inches. The alarm was, however, allayed when it was found that the influx was caused by the breaking away from its moorings of a barge which was moored at Gerrish's wharf. This, coming into collision with the Old Bridge, kept back the rush of water. The barge was completely smashed and the cargo, barrels of oil and sacks, was also carried away in the flood.

IN SOUTHGATE-STREET.

The water had subsided so considerably yesterday morn-

COPY OF ANALYTICAL REPO

Occupations of Fathers Living In The Dolemeads From The Vaccination Registers For 1872, 1892 & 1911

(Numbers in brackets refer to the number of men listed with that occupation)

1872

Baker
Hoop Maker
Mason (12)
Haulier (2)
Painter (5)
Mason's Labourer
Labourer (7)
Tailor (2)
Sawyer
Builder
Engine Fitter (2)
Cabinet Maker
Umbrella Maker
Boatman (2)
Butler
Plumber
Railway Parcel Deliverer
Carpenter (2)
Gardener (4)
Plate Layer
Bell Hanger
Iron Moulder
Coal Miner
Printer
Plasterer (3)
Grocer
Cellarman
Railway Porter
Wood Turner
Police Constable
Mariner
Porter (2)
Quarrier
Marble Polisher
Bargeman
Carman
Cooper
Shoemaker
Coach Painter
Milkman

1892

Wood Turner
Railway Signalman
Quarryman
Waterman
Musician
Carpenter (2)
Mason (9)
Wood Sawyer
Printer
Labourer (4)
Farm Labourer
House Painter
Iron Founder's Labourer
Seaman
Plasterer
Mason's Labourer (4)
Police Constable
Carver and Gilder
Gas Fitter
Coal Miner
French Polisher
Cellarman

Plumber
Railway Packer (3)
Grocer
Gardener (4)
Post Office Letter Stamper
Baker (2)
Carter (7)
Blacksmith
Iron Moulder
Tailor's Porter
Corn Merchant

1911

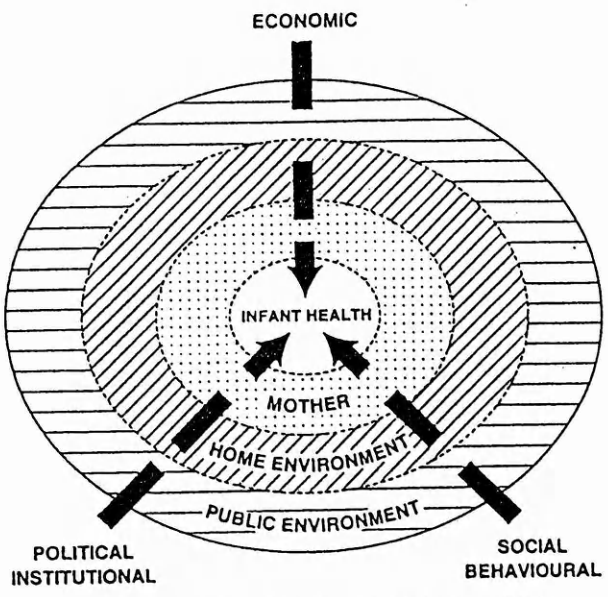
Valet
Iron Founder's Labourer
Brewer
Dairyman
Railway Labourer (3)
Grocer's Porter
Coachman
Telegraph Wireman
House Painter (4)
Mason's Labourer
Stableman
Mason (2)
Road Labourer
Carpenter
Builder's Labourer
Gardener
Carter
Coach Painter
Plumber
Blacksmith
Brewer's Labourer

APPENDIX 5. MODELS SHOWING THE RELATIONSHIP BETWEEN POSSIBLE CAUSES OF INFANT MORTALITY

5.a. Schematic representation of the levels of influence affecting infant health (Williams & Galley - 1995)

A summary of factors influencing infant mortality rates proposed by Sir Arthur Newsholme (Woods, Waterson & Woodward - 1988)

5.b. A simple scheme of the factors influencing levels of infant mortality in the nineteenth century (Williams & Galley - 1995)



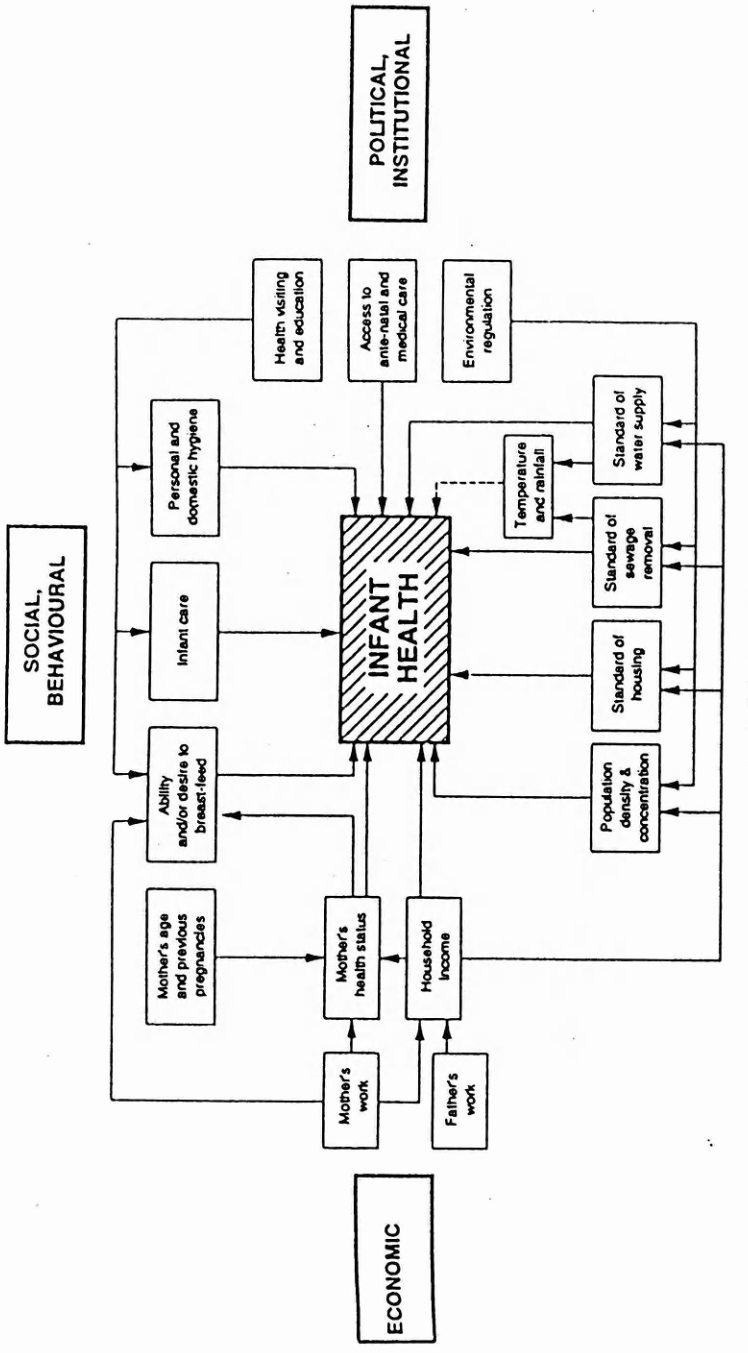
Schematic representation of the levels of influence affecting infant health.

Source: Williams & Galley (1995)

A summary of the factors influencing infant mortality rates proposed by Sir Arthur Newsholme

	Care				
(A) Mother	(B) Of mother	(C) Of child	(D) Poverty	(E) Housing	(F) Sanitary-environment
Age	Ante-natal	Delivery (midwifery)	Housing	Type	Pure water
Work	Post-natal	Visiting (care, advice)	Unemployment	Crowding	Excreta disposal
Family size	Maternal mortality	Feeding	Wife's work		Scavenging
Illegitimacy		Breast			Paving
		Artificial form preparation	Other children's work		
(G) Personal factors					

Source: Woods, Waterson & Woodward (1988)



5. A simple scheme of the factors influencing levels of infant mortality in the nineteenth century.

Source: Williams & Galley (1995)

Vaccination Register(Births) Bathwick Sub-registration district,Bath,1872

No	Birth Date	Birth Place			S	L	Occupation		Vacc date	Death Date	Remarks	
482	03/01/72			Combe Down	m	I	Clerk of works	Abbey Church	08/04/72			
485	09/01/72		Bathwick Hill		m	I	Gardener			23/03/72		
486	08/01/72			Claverton	m	I	Mason		05/07/72			
487	11/01/72			Monkton Combe	f	I	Gardener		05/07/72			
488	13/01/72	4	Argyle St		f	I	Grocer		09/05/72			
489	13/01/72	26	Bathwick Pl		m	I	Driver	Engine	05/08/72			
490	25/01/72			Bathampton	f	I	Butcher		20/06/72			
491	18/01/72		Henrietta Rd	Bathwick	f	I	Plasterer		04/07/72			
492	30/01/72	6	Cheapside Ct		m	I	Lab		15/07/72			
493	15/02/72	5	Edward St		m	I	Proprietor	Landed		03/03/72		
494	27/01/72			Combe Down	m	I	Quarryman		01/05/72			
495	29/01/72		Bathwick Hill(Fiesole)	Bathwick Hill	f	I	Commander	Retd	20/04/72			
496	31/01/72	18	Grove St		m	I	Plumber		24/05/72			
497	08/03/72	13	Grove St		m	I	Mason		22/07/72			
498	01/02/72			Bathampton	m	I	Gardener		08/04/72			
499	13/02/72	42	Pulteney St		m	I	Captain	Retd	03/05/72			
500	04/02/72	10	Grove St		f	I	Gardener				"left"	
1	08/02/72	7	Sydney Pl		f	I	?	Cambridge	01/07/72			
2	06/02/72	2	Sydney Wharf		f	I	Dairyman		07/06/72			
3	15/02/72	2	Henrietta Buildings		f	I	Baker			24/04/72		
4	16/02/72		Sham Castle Lane		m	I	Constable	Police	21/08/72			
5	16/02/72		Sham Castle Lane		f	I	Carter			08/04/72		
6	24/02/72			Claverton	m	I	Farmer		20/06/72			
7	05/03/72	43	Villa Fields	Bathwick	f	I	Lab		16/06/72			
8	26/02/72	63	Villa Fields	Bathwick	m	I	Policeman		01/07/72			
9	29/02/72	30	Pulteney St		f	I	Lt Col	Royal Rifles	11/06/72			
10	07/03/72	2	Grove St		f	I	Brass finisher		05/08/72			
11	04/03/72		Darlington St		f	I	Coachman		13/06/72			
12	03/03/72			Combe Down	m	I	Quarryman		24/06/72			
13	13/03/72	38	Grove St		m	I	Porter		05/08/72			
14	08/03/72			Combe Down	m	I	Mason		02/08/72			
15	25/03/72	12	Bathwick Pl		m	I	Painter		09/08/72			
16	14/03/72			Monkton Combe	f	I	Wheelwright		02/08/72			
17	16/03/72	2	Argyle Yard		m	I	Lab	Masons		22/10/72		
18	20/03/72	18	Bathwick St		m	I	Painter		20/08/72			
19	30/03/72			Combe Down	m	I	Constable	Police	02/08/72			
20	02/04/72			Claverton	f	I	Lab		09/07/72			
21	05/04/72			Monkton Combe	m	I	Lab		02/08/72			
22	04/04/72			Combe Down	f	I	Quarryman		02/08/72			
23	07/04/72			Claverton	f	I	Gardener		02/08/02			
24	11/04/72	15	Bathwick Hill		f	I	Clerk	Holy Orders	11/10/72			
25	11/04/72	1	Henrietta Cottages		m	I	Tailor		15/07/72			
26	25/04/72		Vellors ? Lodge		m	I	Gardener		27/11/72			
27	20/04/72			Combe Down	f	I	Victualler	Licensed	02/08/72			
28	20/04/72			Combe Down	f	I	Lab		22/07/72			

29	16/04/72			Combe Down	f	I	Cabinet maker		02/08/72			
30	21/04/72	10A	Pulteney St		f	I	Upholsterer		30/08/72			
31	28/04/72			Combe Down	m	I	Quarryman		02/08/72			
32	26/04/72			Monkton Combe	m	I	Malster		27/08/72			
33	26/04/72	10	Cottage Row	Bathwick	f	I	Lab		08/08/72			
34	16/05/72	12	Villa Pl	Bathwick	f	I	Coachman				"left"	
35	29/04/72	9	Pulteney St		m	I	Lodging House Keeper			19/07/72		
36	12/05/72			Combe Down	m	I	Carpenter		02/08/72			
37	11/05/72		Pulteney Rd		m	I	Mason		30/07/72			
38	09/05/72		Henrietta Cottage		m	I	Shopman	Bakers	30/09/72			
39	27/05/72	50	Pulteney St		m	I	Lodging House Keeper		17/09/72			
40	13/05/72		Bathwick Hill(Upland House)		m	I	Coachman		17/08/72			
41	18/05/72	25	Grove St		f	I	Lab		19/08/72			
42	15/05/72			Combe Down	f	I	Painter		02/08/72			
43	28/05/72			Combe Down	f	I	Quarryman		07/10/72			
44	28/05/72	2	Hampton Row		f	I	Porter		18/02/73			
45	09/06/72	5	Bathwick Hill(Sim? Pl)		m	I	Priest	C of E	25/11/72			
46	26/05/72			Combe Down	f	I	Quarryman		07/10/72			
47	18/06/72			Monkton Combe	m	I	Lab	Farm	15/10/72			
48	04/06/72	26	Grove St		f	I	Shoemaker		28/04/73			
49	16/07/72	32	Henrietta St		m	I	Carpenter		20/11/72			
50	12/06/72			Claverton	m	I	Coachman		19/09/72			
51	18/06/72	93	Sydney Pl		f	I	Gentleman		06/09/72			
52	12/06/72		Sydney Wharf		m	I	Umbrella maker		26/02/73			
53	16/06/72			Combe Down	m	I	Quarryman		20/08/73			
54	24/06/72	30	Grove St		m	I	Porter		28/10/72			
55	14/06/72			Combe Down	m	I	Gardener		20/11/72			
56	16/06/72	28	Bathwick St		m	I	Butcher		10/11/72			
57	01/06/72		Sydney Mews		m	I	Coachman		09/09/72			
58	30/06/72		Paper Mills near	Monkton Combe	f	I	Foreman	on Railway Works	26/11/72			
59	02/08/72		Combe Down	Monkton Combe	m	I	Lab			02/08/72		
60	24/07/72	9	Pulteney Gardens	Bathwick	f	I	Mercer	Silk	03/12/72			
61	11/07/72		Tucking Mill	Monkton Combe	f	I	Gardener		18/12/72			
62	10/07/72	1	Cottage Row	Bathwick	f	I	Lab		02/12/72			
63	14/07/72	18	Bathwick Pl	Bathwick	f	I	Cellarman		14/10/72			
64	26/07/72	2	Greenham Buildings	Combe Down	m	I	Mason		02/05/73			
65	29/07/72		? Pl	Monkton Combe	f	I	Servant		20/12/72			
66	26/07/72	22	Bathwick Pl	Bathwick	m	I	Cellarman		06/03/73			
67	29/07/72		Hawthorn Cottages	Monkton Combe	f	I	Lab		04/11/72			
68	10/09/72	7	Bathwick Pl	Bathwick	m	I	Porter			10/09/72		
69	25/08/72			Bathampton	m	I	Dairyman		27/11/72			
70	30/09/72	10	Grove St	Bathwick	f	I	Flyman			30/09/72		
71	30/09/72	10	Grove St	Bathwick	m	I	Flyman			30/09/72		
72	30/09/72		Boat House	Bathwick	f	I	Lab			30/09/72		
73	13/09/72		Cremorne Cottage	Bathwick	m	I	Engineer		08/01/73			
74	29/08/72		Alma Cottage	Monkton Combe	m	I	Mason		20/12/72			
75	05/09/72		Combe Down	Monkton Combe	m	I	Gardener		07/12/72			

76	14/09/72		Henrietta Pl	Bathwick	f	i			19/04/73				
77	06/09/72		Bathwick Dairy	Bathwick	m	I	Mason		25/08/73				
78	10/09/72	3	Darlington St	Bathwick	m	I	Clergyman		27/01/73				
79	16/09/72	1	Henrietta Cottages	Bathwick	f	I	Waterman		13/01/73				
80	01/10/72			Monkton Combe	f	I	Lab		07/02/73				
81	20/09/72		Laburnum Pl	Monkton Combe	f	I	Quarryman		07/12/72				
82	25/09/72		Grove St	Bathwick	f	I	Butcher		26/02/73				
83	22/09/72	1	Sydney Wharf	Bathwick	m	I	Gardener		30/12/72				
84	24/09/72	3	Tyney Pl	Monkton Combe	m	I	Plumber		20/12/72				
85	26/09/72	9	Johnstone St	Bathwick	m	I	Clergyman		06/02/73				
86	04/10/72	14	Bathwick Pl	Bathwick	m	I	Coachman		17/02/73				
87	09/10/72	31	Henrietta St	Bathwick	m	I	Carver	and Gilder	09/05/73				
88	20/10/72	10	Raby Pl	Bathwick	f	I	Artist		17/12/72				
89	26/09/72			Bathampton	f	I	Grazier		08/01/73				
90	08/10/72		Villa Fields	Bathwick	f	I	Gardener		18/02/73				
91	23/10/72	59	Pulteney St	Bathwick	m	I	Clerk	in Holy Orders	03/03/73				
92	08/10/72	24	Bathwick Pl	Bathwick	m	I	Lab	Masons	04/08/73				
93	10/10/72	5	Argyle St	Bathwick	m	I	Draper		20/04/73				
94	20/10/72	11	Hampton Row	Bathwick	f	I	Gardener		27/02/73				
95	15/10/72	8	Villa Pl	Bathwick	f	I	Lab		15/04/73				
106	23/10/72	13	Raby Pl	Bathwick	m	I	Clergyman		17/02/73		No reason for number change		
107	13/10/72	2	Grove St	Bathwick	m	i				28/03/73			
108	22/10/72			Combe Down	f	I	Solicitor		05/02/73				
109	25/11/72	1	York Pl	Bathwick	m	I	Gardener		19/05/73				
110	24/10/72			Claverton	m	I	Lab	Farm	28/04/73				
111	24/10/72			Bathampton	f	I	Farmer		05/02/73				
112	28/10/72			Monkton Combe	m	I	Carter		07/02/73				
113	29/10/72			Bathampton	f	I	Grocer			11/12/72			
114	10/12/72	3	Villa Pl	Bathwick	f	I	Lab			10/12/72			
115	03/11/72	13	Hampton Row	Bathwick	m	I	Cellarman		20/03/73				
116	31/10/72		Viaduct Inn	Monkton Combe	f	I	Victualler	Licensed	05/05/73				
117	06/11/72		Combe Down	Monkton Combe	f	I	Quarryman		17/07/73				
118	07/11/72	24	Grove St	Bathwick	f	I	Flyman		11/02/73				
119	13/11/72	13	Pulteney Gardens	Bathwick	m	I	Accountant		06/05/73				
120	21/11/72		Combe Down	Monkton Combe	f	I	Gardener		26/02/73				
121	11/10/72			Bathampton	m	I	Esquire		16/04/73				
122	12/11/72		Combe Down	Monkton Combe	f	I	Quarryman			20/03/73			
123	16/11/72			Bathampton	m	I	Dairyman		22/04/73				
124	16/11/72	14	Johnstone St	Bathwick	m	I	Colonel	late 11th Regiment	04/04/73				
125	25/11/72	27	Grove St		m	I	Carpenter		14/03/73				
126	30/11/72	9	Sydney Pl		f	I	Student	Law	10/03/73				
127	23/11/72	10	Grove St		f	I	Carpenter		29/11/74				
128	06/12/72		Combe Down	Monkton Combe	f	I	Quarryman		07/02/73				
129	01/12/72	3	Vellone Lane	Bathwick	m	I	Carpenter		10/03/73				
130	14/12/72	8	Laura Pl		m	I	Miller		22/03/73				
131	12/12/72		Bathwick Hill		f	I	Groom		08/03/73				
132	12/12/72	15	Hampton Pl		m	I	Constable	Police			"left"		

133	21/12/72	30	Bathwick St		f	I	Proprietor	Fly	08/04/73			
134	21/12/72	2	Grove St		m	I	Painter			01/02/73		
135	22/12/72	4	Kirkham's Buildings		m	I	Chairman		25/03/73			
136	25/12/72	7	Grove St		m	I	Bookmaler		28/07/73			
137	28/12/72		Combe Down	Monkton Combe	m	I	Quarryman		02/05/73			

Vaccination Register(Births) Bathwick Sub- registration district, Bath, 1892

No	Birth Date	Birth Place				S	L	Occupation		Vacc date	Death Date	Remarks	
206	09/01/92	10	Mount Pleasant		Monkton Combe	f	I	Lab	Gen	28/10/92			
207	19/01/92	26	Grove St		Bathwick	f	I	Driver	Fly	21/03/92			
208	17/01/92	12	Grove St		Bathwick	f	I	Driver	Engine			708	
209	30/01/92	8	Edward St		Bathwick	m	I	Lodging House Keeper		19/04/92			
210	18/01/92	26	Grove St		Bathwick	f	I	Wheel chairman		28/03/92			
211	15/01/92		Goldney House	Combe Down	Monkton Combe	f	I	Coachman	Domestic			709	
212	24/01/92	3	Cleveland Row		Bathwick	f	I	Tobacconist		02/08/93		710 Vacc	
213	26/01/92		Williamstowe	Combe Down	Monkton Combe	m	I	Carver				711	
214	21/01/92		Smallcombe Farm		Bathwick	f	I	Farmer		05/05/92			
215	05/02/92	3	Daniel St		Bathwick	f	I	Independant Means		02/09/92			
216	06/02/92		Fords Cottages	Combe Down	Monkton Combe	m	I	Baker		14/11/92		712 Vacc	
217	22/02/92				Monkton Combe	f	I	Lab	Farm	29/04/92			
218	26/02/92	43A	Villa Fields		Bathwick	m	I	Tailor	Journeyman	27/09/92			
219	24/03/92				Claverton	m	I	Lab	Gen	13/10/92			
220	05/03/92	6	Henrietta Buildings		Bathwick	m	I	Carter	Bakers	05/07/92			
221	08/03/92	5	Abbey Pl	Combe Down	Monkton Combe	f	I	Chimney Sweep		26/12/92			
222	13/03/92	4	Canal Cottages	Combe Down	Monkton Combe	f	I	Lab	Canal	06/07/92			
223	31/03/92	5	Avenue Pl	Combe Down	Monkton Combe	m	I	Valet			03/06/92		
224	18/04/92	43	Pulteney St		Bathwick	f	I	M.B.		24/07/93		714 Vacc	
225	20/03/92		Bathampton Farm		Bathampton	m	I	Farmer		27/07/92			
226	01/05/92	4	Avenue Pl	Combe Down	Monkton Combe	f	I	Cabinet maker	Journeyman			715	
227	05/05/92	13	Hampton Row		Bathwick	f	I	Carpenter	Journeyman			716	
228	10/04/92		Garden Cottage	Combe Down	Bath	f	I	Gardener	Journeyman			717	
229	15/04/92	29	Sydney Buildings		Bathwick	f	I	Pawnbroker		24/08/92			
230	15/03/92	19	Bathwick Hill		Bathwick	f	I	Banker		16/07/92			
231	24/05/92		Vineyards Fram		Claverton	m	I	Farmer		18/08/92			
232	22/05/92	4	Lodge	Cleveland Bridge	Bathwick	f	I	Carpenter		02/08/92			
233	15/05/92	5	Albert Pl	Combe Down	Monkton Combe	m	I	Coachman	Domestic			718	
234	07/05/92	4	Albert Pl	Combe Down	Monkton Combe	f	I	Lab	Gen			719	
235	04/05/92		Cleveland Baths		Bathwick	m	I	Valet	Domestic servant	28/10/92			
236	30/05/92		Henrietta Mews		Bathwick	m	I	Ostler		08/11/92			
237	28/05/92	14	Hampton Row		Bathwick	m	I	Constable	Police	15/09/92			
238	15/05/92	1	Green Cottages	Combe Down	Monkton Combe	m	I	Servant	Domestic	28/10/92			
239	18/06/92	3	Barnard Villas		Bathwick USD	m	I	Surveyor	Land			720 Postponed by med cert till 18/3/93	
240	03/06/92	37	Pulteney St		Bathwick USD	f	I	Lodging House Keeper		24/03/93		721 Vacc	
241	26/05/92	3	Albert Pl	Combe Down	Monkton Combe RSD	m	I	Cabinet maker	Journeyman	21/03/92		722 Vacc	
242	27/05/92	3	Gladstone Pl	Combe Down	Monkton Combe RSD	m	I	Quarryman				723	
243	23/05/92	1	Fairfield Villas		Bathwick USD	m	I	Sacristan		25/08/92			
244	16/06/92	4	Hampton Row		Bathwick USD	f	I	Paper embosser		17/10/92			
245	25/06/92		Pillar's Cottage		Claverton RSD	m	I	Lab	Farm		25/07/92		
246	01/07/92	1	Copseland		Claverton RSD	m	I	Surveyor	Land	10/02/93		724 Vacc	
247	14/06/92		Quarry Rise	Combe Down	Monkton Combe RSD	f	I	Baker	Master	14/11/93			
248	05/07/92		Norwood Farm		Claverton	f	I	Farmer				1161	
249	23/06/92	3	Highbury Buildings	Combe Down	Monkton Combe	m	I	Quarryman				1162 Postponed by med cert till 24/11/93	
250	04/07/92	6	Raby Pl			f	I	Plumber				1163	
251	09/07/92	2	Fox Cottages	Combe Down	Monkton Combe	f	I	Gardener	Domestic	28/10/92			
252	04/07/92	28	Powlett Rd		Bathwick	m	I	Cellarman	Brewers	12/09/92			
253	22/07/92	2	Julian Cottages		Monkton Combe	m	I	Carter	General	28/10/92			
254	05/07/92	4	Henrietta Buildings		Bathwick	m	I	Turner	Engine			1164 "Gone"	

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255	11/07/92	3	Henrietta Cottages		Bathwick	f	I	Turner	Iron	29/07/93		1165 Vacc	
256	17/07/92		The Normans		Bathampton	m	I	Farrier		10/10/92			
257	06/07/92		Elmstead Lodge		Bathwick	m	I	Engineer	Mechanical			1166	
258	13/07/92	13	Grove St			f	I	Lab		12/09/92			
259	24/07/92	6	Sydenham Terr	Combe Down		f	I	Quarryman		15/05/93		1167 Vacc	
260	24/07/92	2	Clifton Villas	Combe Down		f	I	Architect		02/05/93		1168 Vacc	
261	30/07/92		Manor House		Monkton Combe	m	I	Mill puff maker		14/10/92			
262	05/08/92	7	Villa Fields		Bathwick	m	I	Confectioner		20/05/93			
263	31/07/92	2	Upper House	Combe Down		m	I	Quarryman		15/05/93		1170 Vacc	
264	05/08/92	5	Cleveland Row		Bathwick	m	I	Porter				1171 "Gone"	
265	08/06/92	17	Clifton Villas	Combe Down		f	I	Solicitor		01/12/92			
266	06/08/92	1	Johnstone Pl	Combe Down		f	I	Butcher		16/11/92			
267	22/08/92	3	Alma Buildings	Combe Down		f	I	Victualler	Licensed	23/11/92			
268	27/08/92	6	Sydenham Terr	Combe Down		f	I	Quarryman		15/05/93		1172 Vacc	
269	21/08/92		Canal Bank		Bathwick	m	I	Lab		15/07/93		1173 Vacc	
270	04/08/92	1	Woodbine Pl	Combe Down		f	I	Decorator				1174	
271	24/08/92				Claverton Down	f	I	Quarryman				1175	
272	10/09/92	4	Church Cottages		Monkton Combe	m	I	Lab		05/05/93			
273	26/08/92		Tucking Mill		Monkton Combe	f	I	Lab				1176	
274	28/08/92	15	Grove St		Bathwick	m	I	Carter		06/02/93			
275	30/08/92		Park Villa		Monkton Coombe	m	I	Carpenter		23/12/92			
276	03/09/92	1	Tyney Pl	Combe Down		m	I	Grocer		16/12/92			
277	26/09/92		Leicester House	Combe Down		f	I	Book maker			04/10/92		
278	10/09/92	49	Villa Fields			f	I	Butcher		08/07/93		1177 Vacc	
279	29/08/92	1	Priory Cottages	Combe Down		f	I	Dairyman		08/05/93		1178 Vacc	
280	05/09/92	17	Powlett Rd			f	I	Coachman				1179	
281	02/09/92	8	Green Cottages	Combe Down		f	I	Lab		05/05/93		1180 Vacc	
282	29/08/92		Sydenham Cottages	Combe Down		m	I	Quarryman				1181	
283	13/09/92				Claverton	m	I	Lab	Farm	20/12/92			
284	19/09/92	3	Tyney Pl	Combe Down		f	I	Quarryman		10/02/93			
285	13/09/92	2	Chapel Row		Bathampton	m	I	Lab	Gen	25/10/92			
286	12/09/92	20	Darlingington Pl			m	I	Accountant				1182. Postponed by med cert till 28/8/93	
287	06/09/92	27	Grove St			f	I	Lab	Masons			1183 "Gone"	
288	12/09/92	23	Grove St			f	I	Newsagent				1184	
289	17/09/92	2	Gladstone Pl	Combe Down		m	I	Stone mason		06/12/92			
290	04/10/92		Avenue House	Combe Down	Monkton Combe	m	I	Carpenter	Journeyman	05/05/93		1185 Vacc	
291	30/09/92	1	Sydenham Terr	Combe Down	Monkton Combe	f	I	Grocer		05/08/93		1186 Vacc	
292	05/10/92		Sham Castle Lane		Bathwick	f	I	Tailor	Journeyman	12/12/92			
293	06/10/92	2	Highbury Buildings	Combe Down	Monkton Combe	m	I	Baker				1187	
294	11/10/92	19	Powlett Rd		Bathwick	f	I	Gardener	Domestic			1188	
295	06/10/92	15	Grove St		Bathwick	m	I	Tailor	Journeyman	27/03/93			
296	12/10/92	13	Grove St		Bathwick	m	I	Carter	Grocers		12/02/93		
297	17/10/92	13	Grove St		Bathwick	f	I	Gardener	Domestic	21/02/93			
298	14/11/92	20	Bathwick St		Bathwick	f	I	Corporal	S.W.B.			1189 "Gone"	
299	19/10/92		Grapevine Cottage		Bathwick	f	I	Gardener	Domestic	06/02/93			
300	21/10/92	6	Speedwell Cottages	Combe Down	Monkton Combe	m	I	Cabinet maker	Journeyman	08/05/93		1190 Vacc	
301	28/11/92		North Lodge	Pulteney Rd		m	I	Carpenter				1191 Postponed by med cert till 12/8/93	
302	03/11/92		The Grove		Bathwick	f	I	Major	Retd	09/03/93			
303	07/11/92		Sewell Cottage	Combe Down		f	I	Tobacconist		15/03/93			
304	14/11/92	33	Henrietta St			m	I	Proprietor	Hotel	28/02/93			
305	06/11/92	4	Henrietta St			f	I	Lodging House Keeper		21/03/93			

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306	23/10/92		Rosery		Bathwick	f	I	Organ builder				1192	
307	12/11/92	9	Grove St			f	I	Carter				1193	
308	23/12/92				Bathampton	m	I	Lab			30/12/92		
309	20/11/92	7	Grove St			f	I	Beer House Keeper		30/05/93			
310	31/12/92	19	Bathwick St			f	I	Coachman	Domestic		31/12/92		
311	24/11/92	6	Clarence Pl		Claverton	f	I	Carter	General	31/01/93			
312	30/11/92	1	Hermon Cottages	Combe Down	Monkton Combe	m	I	Stonemason		01/10/94		1821	
313	05/11/92		Grosvenor Brewery		Bathwick	f	I	Victualler	Licensed	05/06/94			
314												Birth in 1893	
315	12/12/92	12	Grove St		Bathwick	f	I	Wheel chairman		20/04/96		1834 Not found tho' Vacc Reg entered as vaccinated in 1896	
316	28/12/92	1	Byfield Pl	Combe Down	Monkton Combe	m	I	Carrier	Milk	10/04/93			
317	30/12/92		All Saints Pl		Claverton Down	f	I	Groom and Gardener	Domestic	12/05/93			